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11 January 2002

Mr. Robert Sanchez  
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RE: Transmittal – *Response to Comments Document*  
RI/RA and FS Reports – Site Soils and Overburden Ground Water  
Galaxy/Spectron Superfund Site – Elkton, Maryland  
ERM W.O. No. 94907.29

Mr. Sanchez:

On behalf of the Spectron Site Waste Generator and Transporter Group II (PRP Group), Environmental Resources Management, Inc. (ERM) is herein submitting responses to United States Environmental Protection Agency (USEPA) comments submitted to the PRP Group in correspondence dated 13 November 2001. The comments are in regard to the March 2001 Remedial Investigation/Risk Assessment (RI/RA) Report and June 2001 Feasibility Study (FS) Report prepared for the Galaxy/Spectron Superfund Site (Site) in Elkton, Maryland. The individual comments and corresponding responses are provided in this document for your review and consideration. In addition to the responses to individual comments, the RA portion of the RI/RA Report has been segregated into a stand-alone report (Revised Draft Human Health Risk Assessment Report) that incorporates USEPA's comments regarding the RA. This report is attached for your review.

The primary comments regarding these documents pertained to the following:

- Potential for the presence of overburden VOC sources,
- Need for source-focused remediation of perceived overburden VOC sources,
- Creek Liner/Treatment System performance, and
- Natural Flushing being insufficient to meet the RAOs.

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Summary responses to these primary comments are presented below following a description of the site conceptual model.

### ***SITE CONCEPTUAL MODEL***

In order to respond to the comments, a site conceptual model has been developed to enhance understanding of current site conditions. Figure 5-24 (provided as an attachment to ERM's comment responses) illustrates the site conceptual model, which is summarized as follows.

- The Site is located within a steep valley setting and Little Elk Creek flows through the valley. The Site is located immediately adjacent to the creek, on the western side.
- The overburden ranges from 4 to 16 feet thick and is underlain by fractured bedrock. A silt layer of varying thickness occurs in the overburden across the Site. Overburden ground water occurs at 2 to 8 feet below the ground surface (ft bgs) and flows laterally into Little Elk Creek. Bedrock ground water flows upward into the creek from the bottom.
- Limited areas of vadose zone and saturated soils affected by VOCs are present in the overburden, based on the available analytical data (see Figures 5-22 and 5-23, attached).
- Dense non-aqueous phase liquid (DNAPL) is present in bedrock fractures, based on field observations and periodic removal of DNAPL from monitoring well AW-1. Although VOC mass estimates have not been completed, ground water analytical data and field observations of DNAPL strongly indicate that the majority of the VOC mass is present in bedrock rather than the overburden.
- Overburden and bedrock ground water affected by VOCs that flow towards Little Elk Creek are captured and treated by the Creek Liner/Treatment System. Discharge rates of overburden and bedrock ground water flow into the creek estimated by AGC, Inc. (AGC) are 9 and 15 gpm, respectively. Current VOC mass recovery of the Creek Liner/Treatment System is estimated to range from 5.1 to 16.6 pounds per day, based on varying flow rates and influent concentrations. Mass flux estimates developed by AGC in 1996 indicated that approximately 24 percent (1.3 to 3.4 pounds per day) and 76 percent (3.8 to 12.6 pounds per day) of the VOC mass discharged to Little Elk Creek originate from the overburden and

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bedrock, respectively. This data demonstrates that VOCs are naturally being flushed from overburden and bedrock, and are subsequently removed and treated by the Creek Liner/Treatment System.

- The ground water is accumulated in three remote sumps and pumped to an oil/water gravity separator, which removes both light non-aqueous phase liquid (LNAPL) and DNAPL from the influent ground water. The treated water then gravity flows into an equalization tank. The water is then treated using Powdered Activated Carbon Treatment (PACT) to adsorb, biodegrade, and remove organics from the waste stream. Removed solids are discharged to a sludge-conditioning tank. The sludge is dewatered to produce a solid cake for disposal. Filtrate from the sludge is then retreated using the PACT. An air stripper then treats the discharge (decant) from the PACT. The air stripper provides tertiary treatment of the PACT effluent to remove any remaining volatile organics from the ground water and polish the effluent to achieve the required VOCs discharge limit of  $< 100 \mu\text{g/l}$ . Treated water then discharges from the air stripper to Little Elk Creek.
- VOCs present in both the overburden and bedrock likely originated from the former process areas at the Site. It is possible that VOCs were released from the former process areas onto the previously unpaved surface soil, leached through vadose zone soil and into the saturated overburden soils, and ultimately into the bedrock. DNAPL accumulated in and migrated through various bedrock fractures. Although VOC mass estimates have not been completed, ground water analytical data, field observations of DNAPL, mass flux estimates, and Creek Liner/Treatment System operating data strongly indicate that the majority of the VOC mass is present in bedrock.

### ***PRESENCE OF VADOSE ZONE SOURCES***

Historical records and information recently received from the Site owner, Mr. Paul Mraz, indicate that impacted soil was removed from processing locations, storage tank locations, and the former waste disposal pit and lagoon prior to the placement of the existing asphalt cap. These records indicate that the impacted soil removal activities were completed during the early 1980's under an order from the Maryland Department of Health and Mental Hygiene, Office of Environmental Programs.

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Isoconcentration maps were developed for total VOCs present in both vadose zone and saturated zone soils (Figures 5-22 and 5-23, respectively, attached). Small areas where VOC concentrations in overburden soil exceed risk based concentrations (RBCs) and/or MDE standards are indicated on both figures, including a small area in the vicinity of the former evaporation lagoon and other small areas near the former process areas. However, there are no identified areas sufficiently large enough or containing VOCs at high enough concentrations to be considered a source that warrants source-focused remedial efforts.

The small area of affected soil within the footprint of the former evaporation lagoon is based on a field observation of DNAPL in one of the soil borings (B-1) advanced in that area. The analytical results of soil samples collected from other soil borings advanced around this area indicate that the affected area is limited to the immediate vicinity of previous soil boring B-1. This finding is consistent with the historical records and related information that indicate affected soil was excavated from the former evaporation lagoon in the early 1980s. This area and the associated potential mass of VOCs are too small to be considered a source contributing to Little Elk Creek surface water and/or contributing a significant mass of VOCs to bedrock. Additional excavation or other source area remediation in this area would not provide a benefit to the Site. The Creek Liner/Treatment System would still be required because the majority of the VOC mass is contributed by bedrock ground water that flows to the creek, and is currently being collected and treated by the Creek Liner/Treatment System.

The other small areas of VOC-affected soil in the vicinity of the former process areas are based on the analytical results of soil samples collected from a limited number of soil borings surrounding this area. The PRP Group proposes to perform a supplemental remedial investigation of the overburden to evaluate whether a significant source area exists beneath the existing concrete slabs and asphalt cap. However, there are no identified areas containing VOCs at high enough concentrations to be considered a source that warrant source-focused remedial efforts.

#### **SOURCE-FOCUSED REMEDIATION**

USEPA comments indicated that remediation of overburden source areas is necessary for the Site, and that remediation of such source areas would reduce overall project costs by reducing the operating life of the Creek

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Liner/Treatment System. Additionally, USEPA indicated that remediation technologies to be considered include horizontal well soil vapor extraction (SVE), enhanced biodegradation, chemical oxidation, bioventing/biosparging, and in situ thermal heating. ERM will evaluate these technologies and Natural Flushing more fully as part of a revised FS Report.

Source-focused remediation and other corrective actions have previously been performed at the Site. These include the following:

- In 1982, the property owner excavated the upper six inches of soil across the Site and some additional VOC-impacted soil associated with the former process areas, storage tanks locations, and the former waste disposal pit and lagoon; installed perimeter dikes; and capped the Site with asphalt.
- In 1988, the PRP Group conducted a removal action to materials remaining in drums and tanks to mitigate potential hazards of fire, explosion, or exposure to the material.
- In 1998, approximately 2,000 cubic yards of affected creek sediments were excavated from Little Elk Creek as part of the Creek Liner/Treatment System construction.
- DNAPL has been and still is being removed periodically from monitoring well AW-1.

Additional source-focused remediation of vadose zone and saturated soils beyond what has already been completed at the Site would not significantly alter the necessity, performance, or duration of the existing Creek Liner/Treatment System based on the following:

- No identified VOC source areas warranting source-focused remediation are present in the overburden soils;
- Natural ground water flow through the overburden is currently flushing VOCs toward Little Elk Creek and the VOCs are being captured and treated by the Creek Liner/Treatment System at an approximate rate of 1.3 to 4.0 pounds per day. This is a higher mass removal rate than achieved by many ground water pump and treat systems;
- Remediation of site soils and overburden ground water will not significantly reduce project costs or the operating life of the Creek Liner/Treatment System since an estimated 76 percent of the total

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VOC mass discharged to the existing system comes from the underlying bedrock (approximately 3.8 to 12.6 pounds per day); and

- The Creek Liner/Treatment System has proven to be an effective remedial alternative for the site.

Even if no VOCs were present in site soil and overburden ground water, the Creek Liner/Treatment System would still be needed for a significantly long time to capture and treat affected bedrock ground water discharging to Little Elk Creek. Thus, there is little/no cost benefit or benefit to human health and the environment by further remediation of the overburden. Any remaining overburden contamination not already addressed by previous remedial activities is already being effectively captured and treated by the existing Creek Liner/Treatment System. As long as the bedrock ground water is affected by VOCs, the Creek Liner/Treatment System will be needed.

#### ***CREEK LINER/TREATMENT SYSTEM PERFORMANCE***

The PRP Group and O'Brien & Gere gave a presentation on the Creek Liner/Treatment System to USEPA and the Maryland Department of the Environment (MDE) on 15 November 2001. In summary, the Creek Liner/Treatment System has proven to be an effective remedial measure for the Site. Creek surface water concentrations of VOCs were reduced several orders of magnitude following start up of the Creek Liner/Treatment System (see Figures 2-2a and 2-2b) and VOC concentrations have been below Maryland ambient water quality standards ever since. Over 5,858 pounds of VOCs have been removed by the Creek Liner/Treatment System through December 2001. Based on VOCs concentrations in influent ground water and the Creek Liner/Treatment System extraction rate, 5.1 to 16.6 pounds of VOCs are being removed on a daily basis, and approximately 24 percent of this mass is being contributed by the natural flushing of VOCs from the overburden.

A 100-gpm granular activated carbon (GAC) adsorption system has been added to the Creek Liner/Treatment System. With this additional treatment capacity, the Creek Liner/Treatment System will continue to operate for an extended period of time with only normal maintenance that would be required for any remedial system.

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## **NATURAL FLUSHING AND RAOs**

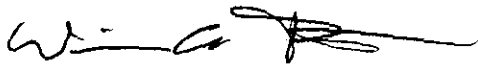
USEPA comments indicate that Natural Flushing alone does not satisfy the RAOs. It is ERM's opinion that Natural Flushing in combination with continued operation of the Creek Liner/Treatment System is a cost-effective remedial alternative for the Site and does meet the RAOs. Reductions in toxicity, mobility, and volume are being achieved by this process, but the rate of achieving these reductions is perceived to be slower than a more aggressive remedial action. The 1.3 to 4.0 pounds VOCs per day removed from overburden due to Natural Flushing is better than that achieved by many, if not most, ground water pump and treat systems. The Creek Liner/Treatment System, in essence, is similar to a ground water pump and treat system, except that the Creek Liner/Treatment System passively captures the affected ground water rather than using ground water extraction wells.

## **SUMMARY**

In summary, the RI data support the preferred remedy (Alternative 3), which consists of Natural Flushing, a soil cover, phytoremediation, and continued operation of the Creek Liner/Treatment System. This remedy also includes continued evaluation of its effectiveness, as with any other remediation technology, and will be subject to 5-year effectiveness reviews. Based on Figures 5-22 and 5-23, there are not identified areas sufficiently large enough or containing VOCs at high enough concentrations to be considered a VOC source that warrants source-focused remedial efforts. The RI data presented on these figures are consistent with the historical records and related information that indicate that VOC-affected soil was excavated from the process areas, storage tank locations, and former waste disposal pit and lagoon. The PRP Group proposes to conduct a supplemental investigation to evaluate potential source areas and the completeness of previous soil remediation activities.

If you have any questions or comments, please contact Mr. David Fennimore, P.G. (Earth Data Northeast, Inc.) at 610-524-9466 or me at 610-524-3531 at your convenience. The PRP Group and ERM appreciate your consideration of our responses to your comments.

Sincerely,



William A. Butler, P.E., DEE  
*Project Manager*

Attachments:        *Response to Comments Document*  
                          *Revised Draft Risk Assessment Report*

cc:     Mr. W. David Fennimore, P.G. (Earth Data Northeast, Inc.)  
         PRP Group Technical Committee  
         Mr. Ronald G. Fender (ERM)

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**RESPONSE TO USEPA COMMENTS**  
**Remedial Investigation/Risk Assessment and Feasibility Study Reports**  
**Galaxy/Spectron Superfund Site – Elkton, Maryland**

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***Responses to Comments on the June 2001 Feasibility Study Report  
for Site Soils and Overburden Ground Water***

**Comment No.1**

*Section 3.1: The FS does not provide a clear identification of contaminants. Up to 65% of DNAPL are unknowns. What will be the impact of these unknowns on treatment alternatives? The FS should summarize the clean up objectives of the RI. The FS does not screen impact of shallow ground water to residences.*

**Response to Comment No. 1**

The Site was used for solvent recycling and blending from 1962 to 1988. Reportedly, inspections made in the early 1980's by the Maryland Department of Health and Mental Hygiene, Office of Environmental Programs (MDHMH) identified areas where drums containing controlled hazardous substances were stored directly on the ground surface without any dikes or other means of spill containment. Further, these inspections reportedly determined that during the approximately 20 years of Site activity, spills had occurred under the hose connections adjacent to the Tank Farm dike. In addition, inspections determined that the transfer of waste from both the Area F and Area G dikes to 55-gallon drums resulted in repeated spills. In response, the Site owner was ordered to excavate impacted soil from processing locations, storage locations, and the former waste disposal pit and lagoon. Following the completion of excavation activities, concrete secondary containment structures were constructed in processing and storage areas and the remainder of the Site was capped with asphalt. The Site remained active for an additional three to five years.

Compliance with this order was reportedly monitored by the MDHMH and information regarding these activities are on file at the Maryland Department of the Environment offices.

USEPA Comment No. 1 assumes that DNAPL occurs in soil and overburden. However, this assumption is inconsistent with the source remediation activities discussed above and results of the Remedial Investigation (RI).

A principal finding of the RI was that only one of the 217 soil, sediment, and overburden ground water samples collected from the Site exhibited the presence of mobile DNAPL (Creek Piezometer PZ-19). DNAPL was also observed in soil

boring B-1, but this DNAPL appeared to be non-mobile relative to the DNAPL observed in PZ-19. No additional DNAPL was observed in other soil borings advanced at the Site nor in overburden ground water monitoring wells. This finding is consistent with the historical source removal activities and supports the PRP Group's interpretation that there is not a significant amount of DNAPL in soil or overburden ground water to be considered a significant VOC source.

The Site conceptual model contemplates that some solvents which were released to the ground surface prior to paving the Site and were not removed by historical soil remediation activities migrated into the underlying bedrock.

DNAPL has been observed in three bedrock monitoring wells. DNAPL is periodically removed from bedrock monitoring well AW-1. The constituents that make up the DNAPL are known. This DNAPL is characterized prior to off-site recycling/disposal at a Safety-Kleen facility.

The nature and extent of contamination within the Site soil and overburden ground water discussed in Section 1.4.2 of the Feasibility Study (FS) Report. Tables 1-1 and 1-2 summarize the constituents detected in soil and overburden ground water, respectively, with the range of concentrations. Table 1-3 summarizes the Constituents of Potential Concern (COPC) retained for quantitative risk assessment. The methodology used to select the COPCs is provided in the RI/RA Report and the Revised Draft Human Health Risk Assessment Report.

A component of the contamination recovered from the Creek Liner/Treatment System (approximately 24 percent) is VOC contamination from the Site soil and overburden ground water. Performance monitoring data indicates that the existing aboveground ground water treatment system has a removal efficiency of 99.99 percent for Site-related contaminants.

Acknowledging that the development of alternatives shall be fully integrated with the Site characterization activities of the RI, the establishment of remedial action objectives (RAOs) is typically a component of the FS Report.

The Remedial Action Objectives (RAOs) are presented in Section 2.2 of the FS Report, and are as follows:

- Continue to limit exposure to soil and overburden ground water that presents an unacceptable risk (carcinogenic risk greater than  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  and hazard index exceeding 1.0) to human health and the environment, and
- Continue to prevent VOCs present in overburden ground water from impacting Little Elk Creek surface water.

The FS does not screen the impact of shallow ground water to residences because the RA did not identify this to be an exposure pathway of concern, as presented in the Revised Draft Human Health Risk Assessment Report (attached).

## **Comment No. 2**

*Section 3.3.1: Develop technical and cost evaluations for a system that would isolate the site from upgradient "clean water" flows. The evaluation should consider the benefits of isolating contaminated soils and the possible increase of capacity potential of the Wastewater Treatment Plant (WWTP).*

## **Response to Comment No. 2**

The design and installation of an effective system to isolate clean, upgradient ground water flows from the Site would be prohibitively expensive and may actually decrease the decrease mass removal of contaminants from the overburden. There are numerous technical, implementation, and cost concerns that discourage implementation of such a system. A discussion of these concerns was presented in Section 3.3.1 of the FS Report. Thus, completing a technical and cost evaluation is not warranted for such a system.

Natural flushing of constituents from the saturated overburden with clean ground water with subsequent capture by the on-site Creek Liner/Treatment System is a viable and effective treatment alternative for the overburden. This conclusion is supported by Creek Liner/Treatment System operational data, as presented to the USEPA and MDE by O'Brien & Gere Engineers, Inc. during a 15 November 2001 meeting. The ground water recovered as part of the operation of the Creek Liner/Treatment System contains a significant VOC mass, based on monthly influent water samples from July 2000 through December 2001. Treatment System influent VOC concentrations during this time period have ranged from 12,049 to 31,390 µg/L. A calculated estimated total of 5,858 pounds of VOCs have been extracted and treated through December 2001. The mass removal rate has not declined significantly since startup, which suggests that there continues to be a significant driving force that is maintaining an effective capture, removal, and treatment of VOC mass from recovered ground water. Also, the operational data to date show that the influent VOC concentrations are higher during periods of increased precipitation and higher ground water elevations, when the flushing energy is greater (i.e., increased hydraulic gradients and thicker saturated zone). A system to isolate the Site from clean, upgradient ground water would reduce the effectiveness of natural flushing and subsequent capture by the Creek Liner/Treatment System of the VOC mass in the overburden ground water.

A system to isolate clean, upgradient ground water could conceivably reduce ground water flow to the Creek Liner/Treatment System. However, this is not a critical issue. Additional treatment capacity has been added to the Creek Liner/Treatment System in order to treat higher flows. This additional treatment capacity consists of a granular activated carbon (GAC) adsorption system, which treat up to an additional 100 gallons per minute (gpm).

### **Comment No. 3**

*Section 3.3.2: It is true that due to the shallow water table across the site, soil vapor extraction (SVE) technologies will have limited effect due to short-circuiting without the use of low permeability covers. However, the greatest concentrations of VOCs at the site are near or under existing concrete slabs and asphalt covers. These existing covers can be used with horizontal SVE technology to be an effective treatment option. The alternatives presented in Section 4 do not provide for such option. It is understood that the alternatives with the SVE include placement of a low permeability cover and demolition of existing buildings and slabs. To lower costs, the remediation could be done in phases, first utilizing the existing covers and then after the source material in the vadose zone has been treated to developed goals, the existing covers could be demolished and replaced with a vegetative cover. It is important to re-emphasize that the RI did not include sampling under these existing buildings and slabs. The source material that is likely present under these structures needs to be addressed by the FS.*

### **Response to Comment No.3**

The hypothesis that the greatest concentrations of VOCs at the Site are near or under existing concrete slabs and asphalt cap cannot be proven using the existing RI data. As is emphasized in USEPA's comment, an investigation of soil conditions beneath the existing concrete slabs and asphalt cap at the Site was not a component of the USEPA-approved RI Work Plan. As was discussed at the 19 December 2001 meeting with USEPA Region 3, the administrative record and information recently obtained from the Site owner indicates that during the early 1980's under an order from the MDHMH, impacted soil was removed from process areas, storage tank locations, and the former waste disposal pit and lagoon prior to placement of the existing asphalt cap.

In order to confirm this, the PRP Group proposes to conduct a supplemental RI to characterize current subsurface conditions beneath the existing concrete slabs and asphalt cap. The data obtained from this supplemental RI would then be used to evaluate potentially effective remedial alternatives for Site soils and overburden ground water. The results of this remedial alternative evaluation would be presented in a Revised FS Report.

Assuming that USEPA's hypothesis is correct and that a significant VOC source exists beneath the existing concrete slabs and asphalt cap, these Site features could potentially provide an adequate low-permeability cover to prevent short-circuiting of extracted vapors and enhance soil vapor extraction (SVE) performance. However, there are site-specific conditions that would limit the installation and effective operation of a horizontal well SVE or biosparging system, based on ERM's experience installing horizontal well remediation systems and discussions with STAR Environmental, Inc. (a firm specializing in the design and application of horizontal wells for remediation that ERM is currently working with on a horizontal biosparging project). The reasons for this are a shallow water table (3 to 5 ft bgs), the presence of subsurface structures and debris (building foundations, support piers, re-bar, concrete/stone/wood rubble from former Site facilities and operations), and an irregular bedrock surface.

The shallow water table at the Site does not provide a sufficiently thick vadose zone to facilitate an effective zone of influence from SVE and will result in inadequate performance of a horizontal SVE well. A horizontal SVE well would have to be installed close to the water table to ensure the entire vadose zone is being treated. The application of a vacuum will result in raising the water table in the vicinity of the well, which will result in excessive water being removed by the SVE system. Excessive water in a horizontal SVE well will prevent the well from achieving a uniform extraction rate across the well length, and potentially leave areas of untreated soil. In addition to a rise of the water table in response to a vacuum, the natural rise of the water table would likely flood the SVE well and negatively affect well performance.

Subsurface structures and debris could hinder horizontal SVE well installation and performance in the following ways:

- Complications prevent the installation of a horizontal well using directional drilling techniques,
- Damage the well casing and screen during installation as it is pulled through the well boring and contacts subsurface structures and debris (especially re-bar and broken concrete), and
- Provide preferential pathways for extracted soil vapors that could result in leaving areas of untreated soil.

The directional drilling equipment cannot penetrate subsurface structures and debris, but could potentially steer around, over, and/or under them. Since the exact locations of many of the features at the Site are undefined, the steering options could only be determined and evaluated during actual drilling. The

ability to maneuver the drilling equipment would be limited, due to the shallow water table not providing sufficient room above and under subsurface structures and debris.

#### **Comment No. 4**

*Section 3.3.2: Biodegradation: It is true that when bioventing includes only adding air that this application is primarily suitable for aerobically degradable VOCs, however other inputs can be added to enhance anaerobic degradation. For example, bioremediation was performed on a maximum 10 ft. thick vadose zone contaminated with up to 250 mg/kg TCE and 1,000 mg/kg TCA at the Dover Air Force Base (Engineered Approaches to In-Situ Bioremediation of Chlorinated Solvents: Fundamentals and Field Applications, EPA 542-R-00-008, July 2000, Case Study 9). At this site, they enhanced co-metabolic biodegradation by adding low concentrations of propane to the subsurface.*

*Biodegradation technologies for the vadose zone are applicable to this site and should not be eliminated.*

#### **Response to Comment No. 4**

Co-metabolic bioventing and other biodegradation techniques will be evaluated more fully as part of a revised FS Report. As noted in USEPA's comment, positive results were achieved for co-metabolic bioventing from the Dover Air Force Base Field Demonstration. The field demonstration results indicated that soil concentrations of TCE; 1,1,1-TCA; and DCE were substantially reduced by this process. According to the USEPA's March 2000 *Cost and Performance Report* of this field demonstration, it was unclear as to whether biodegradation was completely responsible for the concentration reductions. However, increased chloride concentrations in soil did demonstrate that some of the removal was due to biodegradation.

Potential concerns associated with applying biodegradation at the Site include the following:

- No single biodegradation process will likely be effective for each of the VOCs present, and some VOCs may not be amenable to this treatment process. For example, methylene chloride is aerobically biodegradable while TCE and PCE are biodegradable under anaerobic conditions. TCE and 1,1,1-TCA have been reported to be amenable to co-metabolic biodegradation in the presence of propane and toluene.
- Implementation of biodegradation may affect overburden ground water chemistry and result in potential Creek Liner/Treatment System operating problems. Changes in geochemistry resulting from the addition of various materials in order to enhance aerobic and/or anaerobic biodegradation could

increase biological growth and/or cause inorganic constituents to precipitate. Increased biological growth and/or precipitation of inorganic constituents could adversely impact the Creek Liner/Treatment System performance (e.g., reduce ground water through the gravel underlying the liner, plug piping and pump intakes, increase maintenance of aboveground treatment/ancillary equipment).

- Actual VOC removal/treatment by biodegradation may not exceed the VOC mass removal rates currently achieved by natural flushing and the Creek Liner/Treatment System.
- Laboratory treatability testing and bench-scale pilot testing similar to that performed at the Dover Air Force Base would have to be performed in order to fully evaluate this technology for application at the Site, which will require a substantial amount of time and cost to complete.

#### **Comment No. 5**

*Section 3.3.3: Chemical Oxidation: The statement, " Some limited bench-scale laboratory work indicate that persulfate may be an effective oxidizing agent for these constituents, but this technique has not been demonstrated at a pilot- or full scale basis to be effective", is not accurate. This technology has been used on a full-scale basis and should not be eliminated as an applicable technology. Recent case studies of full scale use of this technology that have been effective for chlorinated ethanes are found in the 2<sup>nd</sup> International Conference on Remediation of Chlorinated and Recalcitrant Compounds Conference Proceedings, Monterey CA, May 2000, Battelle Press.*

#### **Response to Comment No. 5**

Since preparing the FS Report, additional laboratory treatability studies of chemical oxidation have been completed by ERM for the Maryland Sand, Gravel, and Stone (MSGs) Superfund Site in Elkton, Maryland. The MSGs site is affected by a similar list of VOCs as the Site, so treatability study results are appropriate to use for comparison purposes. For the MSGs Site, various chemical oxidants (e.g., hydrogen peroxide, potassium permanganate, persulfate) were evaluated for their effectiveness to treat soil (unsaturated and saturated). The wide variety of VOCs present made it difficult to identify a single oxidant that can effectively treat each of the constituents present. The only chemical oxidant that appeared to be effective for the majority of constituents was persulfate, but it had to be heated to 50 °C in order to be effective. Thus, chemical oxidation using heated persulfate will be evaluated more fully as part of a revised FS Report.

Potential concerns associated with applying chemical oxidation at the Site include the following:

- No single chemical oxidation process will likely be effective for each of the VOCs presumed to be present, and none of the chemical oxidation processes may affect some of the VOCs. For example, chemical oxidation has been shown to be effective for chlorinated ethenes (e.g., TCE), but chlorinated ethanes (e.g., 1,1,1-TCA) and methanes (e.g., methylene chloride) have been reported to be more resistant to chemical oxidation.
- Implementation of chemical oxidation can affect overburden ground water chemistry and result in potential Creek Liner/Treatment System operating problems. Changes in geochemistry resulting from the addition of a chemical oxidant may cause inorganic constituents to precipitate, and possibly increase biological growth in areas downgradient of the areas remediated. Increased precipitation of inorganic constituents and/or biological growth can severely affect the Creek Liner/Treatment System performance (e.g., reduce ground water through the gravel underlying the liner, plug piping and pump intakes, increase maintenance of aboveground treatment/ancillary equipment).
- Laboratory treatability testing similar to that performed for the MSGS Site and pilot-scale testing would have to be performed in order to fully evaluate this technology for application at the Site, which will require a substantial amount of time and cost to complete.

#### **Comment No. 6**

*Section 3.3.3: Enhanced Biodegradation: The statement that treatability studies would be required and for this reason the technology should be deleted is not valid. Treatability Studies are part of the RI/FS process under the ARARs governing this site. If treatability studies are needed to assess the appropriate treatment for source reduction to meet the remediation objectives as stated in Section 2.2, then these studies need to be performed.*

*The statement that, one concern is the numerous VOCs present and relatively high dissolved-phase concentrations of VOCs could prohibit biological growth, is not necessarily true dependant on the type of bacteria and the conditions created for their growth. This is why bench scale studies are performed. Higher concentrations of VOCs may actually improve the conditions for biodegradation (Accelerated Bioremediation of Chlorinated Solvents Workbook prepared by RTDF Bioremediation Consortium, June 2000). This technology should be retained.*

#### **Response to Comment No. 6**

Refer to the Response to Comment No. 4 (above)

#### **Comment No. 7**

*Section 4: The alternatives evaluated in the FS need to include the treatment technologies listed above that should not have been eliminated. Source reduction through these treatment technologies of the VOC mass in the vadose zone, saturated soil layer and overburden ground water will reduce the contribution to the existing ground water collection and treatment system. The long-term cost and future use benefits of aggressive source reduction compared to the proposed natural flushing were not presented. There was not an end point for treatment. Consider treatment of the saturated soils and overburden ground water using: 1) biodegradation, 2) chemical oxidation, 3) bioventing/biosparging, 4) thermal heating (radio frequency heating, steam, etc) or other technologies could also have wider benefits by addressing potential DNAPL at the surface of the bedrock and contribution from the bedrock ground water near the creek. The overall benefit of source reduction is the decreased time and cost for operating and maintaining the current ground water collection and treatment system. The long-term viability of this system was not discussed and evaluated. Long-term wear and tear on the liner, and the long-term effects of large storm events on the system could result in very costly maintenance, repairs, and possibly replacement. Source reduction through aggressive treatment technologies provides long-term cost and site-use benefits that need to be addressed in this FS and the alternatives developed and selected. In addition,*

#### **Response to Comment No. 7**

This comment assumes that a significant source of VOCs exists in the Site soil and overburden ground water presumably under existing concrete slabs and asphalt cap. The PRP Group has proposed to conduct a supplemental RI to evaluate this assumption. In addition, the PRP Group will evaluate the listed technologies more fully as part of a revised FS Report. Natural flushing will be included as a standalone option to comparison with these other technologies.

Source-focused remedial approaches are preferred over hydraulic containment approaches when the source is identified and accessible for remediation purposes. However, this is not the case for this Site. If the predominant sources of VOCs to ground water were present in the overburden, source-focused remediation may be desirable and could potentially result in decreasing the operating life and associated cost associated with operating and maintaining the Creek Liner/Treatment System. However, the primary source of VOCs to ground water is not present in the overburden. The primary source of VOCs to

ground water is present in the bedrock, based on available data and DNAPL observations in monitoring well AW-1. Therefore, the treatment of site soils and overburden ground water would not likely reduce the operating life of and costs associated with the Creek Liner/Treatment System. The Creek Liner/Treatment System would still need to be operated to capture affected bedrock ground water flowing upwards into the bottom of Little Elk Creek.

The long-term viability of the Creek Liner/Treatment System (see Figure 5-24, Site Conceptual Model) has been improved by increasing the treatment capacity. A 100-gpm GAC adsorption system was added to the system to treat additional flow volumes that may occur during storm events. This will prevent some of the minor operating problems that have occurred during previous storm events (i.e., liner floating).

#### **Comment No. 8**

*As stated under the Remedial Action Objectives in Section 2.2, two of the objectives listed include:*

- *Each remedial action shall use permanent solutions and alternative treatment technologies or resource-recovery technologies to the maximum extent practical (40 CFR 300.430 (f)(ii)(E))*
- *Remedial actions are preferred "in which treatment that permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants is a principal element" (section 121(b)).*  
*If the treatment or recovery technologies selected are not a permanent solution, an explanation must be published.*

*The alternative selected, Alternative 3, does not address these objectives in that it does not effectively reduce or eliminate one of the primary sources of contamination at the site. The previous and more recent estimates on the contribution of VOC mass from the overburden ground water to the stream are from 24 to 33 percent. This contribution is significant with regard to potential long-term operation and maintenance of the existing ground water collection and treatment system. The following issues need to be address in this FS and the selected alternative:*

*The selected alternative assumes that the mechanism of flushing is adequately removing the source mass from the site. This assumes that the sources are predominately in the saturated zone soils and ground water. The RI did not clearly define the sources of the VOC mass that is being contributed by the overburden ground water, specifically which portions were from the vadose zone, from the saturated overburden, the dissolved phase in the overburden ground water or DNAPL at the surface of the bedrock. Flushing will not address the source material in the vadose zone. Flushing may be effective over a 30 year period in high permeability areas (e.g., site sandy soils layers); however, it may never be*

*able to flush contaminated silt layers. Treatment of the overburden soils and ground water relying on natural flushing could take significantly longer to reduce the contributions to the creek such that the ground water collection and treatment system could be turned off. Comparisons to the long-term cost effectiveness of addressing the source mass in the vadose and saturated zone using aggressive treatment compared to relying on natural flushing needs to be presented in the FS.*

*If the source mass can be effectively treated, and there are technologies available for this application, then the long-term operation and maintenance costs of the ground water collection and treatment system could be reduced. It should be in the interest of all parties that the long-term cost effectiveness of the proposed remediation be thoroughly evaluated. It is the current industry practice to use aggressive treatment of sources using applicable treatment technologies to reduce the cost of long-term operation and maintenance of ground water collection and treatment systems. Cost benefit of aggressive treatment for source reduction and decrease in long-term operation of the ground water collection and treatment system has not been addressed.*

*The long-term use of the site has not been adequately addressed in the FS or the selected alternative. Without addressing source reduction, uses of the site will be restricted due to limitation of intrusive activities and regrading to provide for ball field and park lighting and structures. Furthermore, if the long-term goal is to provide an accessible park to the public, leaving source material in the vadose and overburden soils and ground water does not provide for potential future decisions to aggressively treat the soils; and ground water in order to reduce the time the ground water collection and treatment system operates. It would be very disruptive if in the future, treatment of source material were performed when the site is accessible to the public.*

#### **Response to Comment No. 8**

This comment assumes that a significant source of VOCs exists in the Site soil and overburden ground water presumably beneath existing concrete slabs and asphalt cap. The PRP Group proposes to conduct a supplemental RI to evaluate this assumption.

As stated in the Response to Comment No. 7, ERM will evaluate the listed, source-focussed remediation technologies and natural flushing as part of a revised FS Report. Long-term use of the Site will also be addressed more fully in the FS Report.

The PRP Group is committed to maintaining the integrity and operation of the Creek Liner/Treatment System. This is considered a cost-effective remedy that effectively and efficiently captures and treats affected ground water from the overburden and bedrock units. With proper maintenance, the current system is a permanent remedy. In order for aggressive treatment of an overburden source

to have a positive cost-benefit impact on the existing Creek Liner /Treatment System, there would have to be one or more defined sources of high concentration and limited size (volume). This is not the solution at the Site.

**Comment No.9**

*A National Historic Preservation Act Report needs to be completed prior to the demolition of structures.*

**Response to Comment No. 9**

The need to prepare this report will be evaluated, and it will be prepared if determined to be required.

**Responses to Comments on the March 2001 Remedial Investigation  
and Risk Assessment Report  
for Site Soils and Overburden Ground Water**

**Comment No. 1**

*Figures 5-4, 5-6, 5-8, 5-10 should show only those borings/geoprobe locations that are within 25 ft. of the cross-section. The ground elevation should be shown through the cross-section. Although this information is presented in various formats in other figures, these cross-sections should include stratigraphy and shallow ground water elevation. It is difficult to interpret these cross-sections in order to develop appropriate contaminant pathway models. It is important to discuss and present in clear graphical format in the RI the nature and extent of the contamination. The figures presented are very helpful in this analysis, but a graphic presenting the contamination data with its relationship to the ground surface and shallow ground water is needed. Specifically if the VOC contamination in the soils is primarily below the shallow ground water depth, than the source and pathway of shallow ground water contamination would be different if the higher concentrations are in the vadose zone. This type of discussion and presentation is needed in the RI in order to evaluate the applicable alternatives in the Feasibility Study. The report has not presented a comprehensive analysis of site data to support the statement that 'additional containment, removal and/or treatment options for overburden ground water beyond continuing to operate the Creek Liner to be warranted.' There are very high contaminant concentrations in the overburden aquifer and soils. These high concentrations will continue one specific area where extent of contamination is in question is to the far Northwest of the site. Logs indicate contamination at depth with a field PID meter but a sample at this depth was not taken to the lab for analysis (See sampling log for PSB-12 and 14).*

**Response to Comment No. 1**

Since it became operational in March 2000, the Creek Liner/Treatment System has removed over 5,800 pounds of VOCs from the ground water and prevented their discharge to Little Elk Creek. Ground water from the overburden and bedrock aquifers, as well as contaminants that leach from the vadose zone to the water table, are captured by the Creek Liner/Treatment System and treated on site. The quarterly surface water sampling results confirm this (Figures 2-2a and 2-2b) as VOC concentrations in the creek have been reduced by one to two orders of magnitude.

The conceptual model for the Site contemplates that contaminants remaining in the vadose zone migrate vertically to the water table and are then captured by the Creek Liner/Treatment System. Dissolved phase contaminants that reach the water table and contaminants that are already below the water table would

also migrate toward the creek where they are effectively captured by the Creek Liner/Treatment System. Regardless of whether contamination is present in the vadose zone, saturated overburden, or bedrock, the contamination is being captured by the Creek Liner/Treatment System. This is shown graphically on Figure 5-24 (attached).

Separate figures depicting the lateral distribution of total VOCs in the vadose soil samples and in the saturated soil samples were prepared and are presented as Figures 5-22 and 5-23, respectively (see attachments). Where multiple samples were collected from either the vadose zone or the saturated zone in a given boring, an average total VOC concentration for each zone was calculated. As a conservative approach, where both laboratory and field GC data were available, the higher of the two measured VOC concentrations was used to calculate the total VOC concentration for a given sample. Also depicted on these figures are the interpreted lateral extent of the soil samples that exceed RBCs or MDE soil standards, based on the available analytical data.

Figure 5-22 (vadose soils) indicates that there are only three small areas in the vadose zone, mostly beneath Areas F and G, where a soil VOC concentration exceeds RBCs/MDE soil standards. A fourth small area of VOCs in vadose zone soils that exceed RBCs/MDE soil standards is centered around boring ISB-1 in the former Evaporation Lagoon. This boring is adjacent to boring B-1 where DNAPL was observed in the saturated soil. Perimeter soil borings (denoted by PSB prefix) were drilled to the water table to delineate the extent of the VOC contamination in the vadose zone. Most of the PSB borings on the southern and western ends of the Site were below detection limits for VOCs, allowing good delineation of the VOCs in those areas of the Site. The PSB borings on the eastern end of the Site near the Providence Road Bridge contained relatively low VOC concentrations in the vadose zone soil samples, but still allowed for delineation of soil VOCs in that area.

Figure 5-23 (saturated soil VOCs) indicates that there is only one small area in the saturated zone in the vicinity of Areas F and G where a soil VOC concentration exceeds RBCs/MDE soil standards. A second small area of VOCs in saturated zone soils that exceed RBCs/MDE soil standards is centered around boring ISB-1 in the former Evaporation Lagoon. In some areas, such as near borings B-1, B-5, B-7, B-9 and ISB-2, VOC concentrations are substantially greater in the saturated soils than in the vadose zone above. Although the lateral extent of soil that exceeds RBC/MDE soil standards is somewhat less in the saturated soils compared to the vadose zone, the overall lateral extent of VOC contamination is greater in the saturated zone compared to the vadose zone. However, regardless of whether VOC contamination resides in the vadose zone, the saturated soils, or the bedrock, the contaminants are migrating first to the

water table then toward the creek where they are being effectively captured by the Creek Liner/Treatment System. A conceptual model of the Site and the Creek Liner/Treatment System is provided as Figure 5-24. This discussion of the relative distribution of the VOCs in the vadose and saturated zones will be included in the revised RI report.

Based on Figures 5-22 and 5-23, there are not identified areas sufficiently large enough or containing VOCs at high enough concentrations to be considered a VOC source that warrants source-focused remedial efforts. This is consistent with the historical records and related information that indicate VOC-affected soil was excavated from the process areas, storage tank locations, and former waste disposal pit and lagoon. Acknowledging that USEPA is not convinced the Site is delineated, the PRP Group proposes to conduct a supplemental RI to evaluate whether there is a VOC source beneath existing concrete slabs and asphalt cap.

The cross-sections depicted on Figures 5-4, 5-6, 5-8 and 5-10 are intended to depict the concentrations along the cross-sections as interpreted by the EVS software.

In boring PSB-12, the interval from 5.5 to 6 feet exhibited an OVA reading of 1000 ppm, using a flame ionization detector. However, this sample was then analyzed with the field GC and did not contain detectable concentrations of VOCs. It is possible that the flame ionization detector responded to methane in this sample that would not be detected in a field GC analysis. In boring PSB-14, the OVA reading of >1,000 ppm was recorded from the saturated portion of the boring sample. However, this reading may also be due to methane in the sample as boring PSB-12 and a similar OVA reading, but field GC results were below detection limits. It should be noted that soil samples from adjacent boring PSB-13 did not contain detectable concentrations of VOCs. Additionally, ground water samples from borings NTW-2, 3, and 4, which are east of boring PSB-14 were below detection limits for VOCs.

## **Comment No. 2**

*The discussion of the existing creek remediation system should include a discussion of the effectiveness of this system in removal of contaminant mass from the site. What percentage of the site contamination is being removed by the existing system? How long will the system need to operate including the treatment system? There is a discussion of mass flux calculations in Section 2.2, p. 2-2. Have these been updated since the focused RI? The mass flux discussion presented in Section 5 of the Draft Focused Remedial Investigation Report 4 May 1994, concludes the shallow ground water contributes one third of the relative mass contributions. Has this estimate been refined since that report?*

*The sources of the shallow ground water contamination should be identified as part of the mass flux discussion. If sources of shallow ground water contamination such as residual contamination in the site soils and the dissolved contamination in the shallow ground water itself can be effectively remediated to reduce the mass flux to the creek, the long-term cost of remediation may be reduced. If this percentage is approximately 33%, then it may be cost effective to actively reduce the inputs from this source. If these estimate have been refined and the contributions lower and therefore not cost effective, this needs to be backed up with the mass calculations and discussion of contribution from the various sources. This information is needed to properly evaluate the alternatives presented in the FS.*

### **Response to comment No. 2**

The RI will be revised to include a discussion of the contaminant mass removal effectiveness of the Creek Liner/Treatment System. The continued operation of the Creek Liner/Treatment System will be evaluated more fully in the FS. This discussion and evaluation are summarized in our response below.

As noted above, the Creek Liner/Treatment System has removed over 5,800 pounds of VOCs (through December 2001) as a result of ground water recovery and natural flushing of VOCs from the overburden and bedrock zones. Influent VOC concentrations have ranged from 12,049 to 31,390 µg/L (based on monthly water samples), and appear to increase during precipitation events and time periods with higher ground water elevations. The mass flux to the Creek Liner/Treatment System, therefore, increases with greater hydraulic or flushing energy. Mass removal rates ranging from 5.1 to 16.6 lbs/day of VOCs are estimated for the Creek Liner/Treatment System. It should be noted that these mass removal rates are based on monthly influent analyses and average flow rates, such that the actual mass removed may vary during the month.

In 1996, AGC updated the mass flux estimate from the May 1994 *Focused Remedial Investigation Report* (see *Removal Action Pre-Design Investigation Summary Report*, AGC, November 22, 1996). The following mass flux estimates from the overburden, bedrock and sediment contributions to the creek were made by AGC:

- |               |              |   |              |
|---------------|--------------|---|--------------|
| ▪ Overburden: | 44.83 mg/sec | ≈ | 8.5 lbs/day  |
| ▪ Bedrock:    | 98.75 mg/sec | ≈ | 18.8 lbs/day |
| ▪ Sediments:  | 44.70 mg/sec | ≈ | 8.5 lbs/day  |

These estimates were based on ground water discharge rates and the six primary VOCs detected at the Site: methylene chloride, 1,1,1-trichloroethane, trichloroethene, cis-1,2-dichloroethene and tetrachloroethene. Some creek

sediments were excavated during the Creek Liner/Treatment System construction, such that the mass flux contribution from creek sediments may be much lower than this estimate. AGC also estimated that the ground water discharge to the creek is 9 gallons per minute (gpm) from overburden and 15 gpm from bedrock, for a total ground water discharge of 24 gpm to Little Elk Creek.

In comparison, the flow rate to the Creek Liner/Treatment System is 30 to 50 gpm, depending on seasonal operating conditions. This recovery rate range is higher than the AGC estimated ground water discharge rate to the creek, indicating that the stream isolation system captures the overburden and bedrock flow to the creek. As the VOC mass is carried by this ground water flow through the overburden aquifer, bedrock aquifer and potentially impacted creek sediments, the Creek Liner/Treatment System is expected to capture the actual VOC mass flux from the Site. The estimated mass removal rate of the Creek Liner/Treatment System (5.1 to 16.6 lbs/day) may be more representative of the current, seasonal mass loading to the creek than prior estimates (the mass flux calculation has not been updated since the 1996 AGC Report). This is also supported by the significant reduction in stream water VOC concentrations, as a direct result of the Creek Liner/Treatment System installation (discussed in the RI Report).

A calculation of the total VOC mass present at the Site has not been attempted to date, due to the inherent uncertainty in estimating concentrations and mass distribution, and the complexity of the VOC distribution in bedrock, including DNAPL. Similarly, the percentage of this mass removed by the Creek Liner/Treatment System has not been estimated. As noted above, the Creek Liner/Treatment System captures the VOC mass flux to the creek. The mass removal efficiency and cost effectiveness of flushing and recovery by the Creek Liner/Treatment System will be compared to other alternatives in the revised FS Report. The potential sources of shallow ground water contamination have been addressed in other responses to comments and will be clarified in the revised RI.

Ground water recovery as part of the Creek Liner/Treatment System will continue, as long as the Creek Liner/Treatment System is necessary to meet applicable surface water quality standards, because the liner will float and be lost if ground water recovery is shutdown. Based on the current VOC influent concentrations (12,049 to 31,390  $\mu\text{g/L}$ ), the Creek Liner/Treatment System is expected to operate for a relatively long time. AGC (1996) measured the stream flow to be 10 to 18  $\text{ft}^3/\text{sec}$  (July 1996), or about 4,500 to 8,000 gpm. The surface water flow to ground water discharge ratio is approximately 200 to 1 (low end). Using a simplified analysis of the dilution of VOC concentrations by surface water, the VOC mass flux to creek would need to be reduced by two orders-of-

magnitude before the Creek Liner/Treatment System could be removed (assuming a surface water concentration of less than 5 µg/L total VOCs). Based on this simplified analysis and assumptions, a reduction of 90% of the VOC mass flux would still not allow the removal of the liner and shutdown of the Creek Liner/Treatment System. This is further confounded by the presence of DNAPL in the bedrock zone. In practical terms, mass removal efforts are not expected to shorten the lifetime of the Creek Liner/Treatment System.

It is also noted that a reduction in the influent VOC concentration does not necessarily result in operation and maintenance (O&M) cost reductions. As the VOC concentrations decrease, it is expected that additional food will be required to maintain biological growth in the PACT reactors; however, less carbon may be used to treat the VOCs. The ground water flow rate to the system however will not change which largely controls the O&M cost. Unless influent VOC concentrations reduce to near effluent limits (100 µg/L) and the system can be operated less than continuously, it is not likely that a reduction in O&M costs will be realized with lower influent concentrations.

### **Comment No. 3**

*Page 2-3, Section 2.3, 6th bullet: Why is the shallow soil not a source? A discussion is needed to make the case for the shallow soil not contributing to the shallow ground water contamination if this is the position being taken. There is no easily enforceable mechanism to prevent the installation of a drinking water well on the Galaxy/Spectron site, consequently, a future use scenario of ground water used as drinking water source is possible. Please reflect this in the report narrative. The Risk Assessment should have included this scenario as the overburden aquifer is currently used for drinking water (RES-10) and would be classified as a class IIa. Because it is one of EPA's expectations as outlined in the NCP to restore aquifers to their beneficial use, a Remedial Action Objective (RAO) for shallow soils and ground water is to remediate these media in order to restore the overburden aquifer as well as the bedrock aquifer for its beneficial use; as a drinking water source.*

### **Response to Comment No. 3**

Historically, the shallow soil (i.e., vadose zone soil) was a source for ground water contamination. However, the RI data does not support an interpretation that a significant VOC source exists in the vadose zone. The PRP Group proposes to conduct a supplemental RI to evaluate whether a VOC source exists beneath the existing concrete slabs and asphalt cap. The Site conceptual model indicates that contamination in the vadose zone migrated vertically to the saturated soils to the top of bedrock. Any remaining contamination in the vadose soils likely continues to migrate to the saturated soils and bedrock where

it discharges to the creek. However, the contamination from the vadose zone, the saturated soil, and the bedrock aquifer is being effectively captured by the Creek Liner/Treatment System. Any source reduction in the vadose soil would only treat a relatively small portion of the Site contamination and would still leave the majority of the contamination in the saturated soil and bedrock aquifer so that the Creek Liner/Treatment System would still need to remain operational.

A future use scenario for the Site that includes ground water used as a drinking water source is discussed in the revised Risk Assessment (attached). It would not be appropriate to discuss this scenario in the RI section of the report. However, including the overburden ground water in a future ground water use scenario would not be realistic because the transmissivity and limited saturated thickness of the on-site overburden is insufficient to provide useable quantities of ground water to a supply well, regardless of whether or not the overburden ground water is contaminated. Additionally, the Site is in the 100-year floodplain for Little Elk Creek, so future residences that would use on-site ground water would not be able to be constructed directly on the Site proper. Further, the State of Maryland requires a 100-foot isolation distance between a known source of contamination and a water supply well, so installation of a future water supply well on the Site itself, or within the contaminant plume of the Site, would not comply with the State's regulation. As a further precaution, a notice could be added to the deed for the Site property to prevent installation of a water supply well.

#### **Comment No. 4**

*Figures 4-6a to 4-6f: It would be very helpful to provide a horizontal scale and some reference points at the ground surface in order to interpret these figures. Reference points such as Area H limits and location of borings is requested to allow the reader to evaluate this stratigraphic interpretation.*

#### **Response to Comment No. 4**

As requested, a horizontal scale and ground surface reference points were added to these figures. The revised figures (4-6a through 4-6h) are attached.

#### **Comment No. 5**

*Section 2.5.2: Have the surface water concentrations met the state requirements? Compare the results with the surface water criteria as was done for the ground water well samples.*

#### **Response to Comment No. 5**

The quarterly results for the creek surface water samples are forwarded to EPA after the results are validated. A copy of the most recent quarterly report dated 26 October 2001 is attached. In the quarterly reports, the analytical results are compared against Maryland Surface Water Quality Criteria (MSWQC) as well as Federal Ambient Water Quality Criteria. Many of the surface water samples collected prior to the installation of the Creek Liner/Treatment System exceeded the MSWQC for 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and benzene. However, after the Creek Liner/Treatment System became operational in March 2000, all surface water samples since that time have been below the MSWQC. Additionally, the last round of surface water samples that were collected in August 2001 were substantially below the MSWQC. Section 2.5.2 of the RI report will be revised to indicate this and will include Figures 2-2a and 2-2b (attached) that depict the substantial reduction in VOCs in the creek water since the Creek Liner/Treatment System was installed.

#### **Comment No. 6**

*Section 2.6, p. 2-8, last Para.: Is there an estimated time frame this system will operate? What percentage is attributed to site shallow ground water and what are the remaining sources of shallow ground water contamination?*

#### **Response to Comment No. 6**

As noted in the response to RI Comment No. 2 above, the Creek Liner/Treatment System is expected to operate for a relatively long time, because ground water recovery must continue to maintain the Creek Liner/Treatment System, and the surface water quality standards are over 1,000 times lower than the current influent VOC concentrations. AGC (1996) estimated that 24% of the VOC mass flux comes from shallow, overburden ground water (this percentage rises to 31% if it is assumed that the contaminated stream sediments have been excavated during liner construction.)

The source of overburden ground water contamination is assumed to be residual VOCs adsorbed to saturated overburden soil, which are being naturally flushed from the overburden toward Little Elk Creek where they are captured and treated by the Creek Liner/Treatment System. Some of the overburden ground water contamination may potentially be contributed by the upward flow of VOC-impacted bedrock ground water.

#### **Comment No. 7**

*Sections 5.3.2 & 5.4.2: It would be very helpful to the reader to outline the source areas (Area F, Area H, and Former Evaporation Lagoon) on the figures depicting soil and ground water contamination since they are specifically referenced in the text under the VOC results.*

#### **Response to Comment No. 7**

Figures 5-4, 5-6, 5-8 and 5-10 (attached) were revised to outline the source areas. Additionally, new figures 5-12a and b and 5-18a through 5-21b (attached) that depict ground water concentrations also outline the source areas.

#### **Comment No. 8**

*Section 5.4: Related to the previous comments, there is a need for better graphical presentation of the concentration of VOC's with depth, and their relationship to stratigraphy, ground water elevation and bedrock surface. Specifically for hallow ground water, there needs to be more detailed analysis and presentation of ground water total VOC, methylene chloride, PCE, TCE and 1,1,1 TCA concentrations with depth within each of the three source areas. The discussion of this graphical presentation needs to more fully describe the higher methylene chloride concentrations at depth between Source Areas F and H, and conclusions regarding the source of the ground water contamination. Although briefly discussed in 5.4.2.1 under Area F with regard to higher concentrations of methylene chloride with depth in G-39 compared to MW-3, no definitive conclusion was made to whether the source of this contamination was DNAPL in this area at the bedrock surface, residual DNAPL in the silty site soils, or from bedrock ground water that has an upward gradient near the creek. Similarly, the source of the higher PCE, TCE, and 1,1,1 TCA in the shallow ground water in the Former Lagoon Area and in Area H to the Bridge, needs to be discussed in greater detail with a graphical presentation of contamination with depth showing bedrock elevation and soil stratigraphy. Is the source of the contamination from DNAPL near B-1 in Area F? Is this indicated by higher concentrations close to the silty soil layer opposed to at deeper depths near the bedrock? Is the VOC contamination in Area H to the Bridge the result of residual soil contamination as stated on page 7-4, and where is the predominant source of this residual contamination. This discussion of variance in contamination concentration with depth is important in assessing potential remedial alternatives in the FS.*

*By identifying remaining sources and targeting these shallow ground water contamination zones both aerial and vertically with applicable treatment technologies, the time that the creek remediation system and treatment unit is operated could be significantly reduced.*

*These targeted treatment options may provide a more cost effective long-term solution by reducing long term operational and maintenance costs. This will depend on the treatment technology effectiveness in targeting sources of the shallow ground water contamination and the shallow ground water itself. To assess the effectiveness of such in-situ treatment options and develop cost for comparison to the long-term costs of the existing system, more discussion is needed in the RI as outlined in these comments.*

#### **Response to Comment No. 8**

Cross sections of the major individual VOC compounds in the overburden ground water (see attached Figures 5-12a and b and 5-18a through 5-21b) have been prepared, which include the stratigraphy, water table, and bedrock surface. However, cross sections of the ground water concentrations in the overburden will only be able to depict limited information because depth-discrete ground water samples were not collected due to the shallow depth of the overburden samples and the overburden itself (5 to 15 feet thick). Depth discrete monitoring well sampling in the overburden is not practical at this Site since the saturated thickness of the overburden varies from only a few feet to approximately 10 to 12 feet. Hence, discussion and presentation of VOC concentrations with depth in the overburden will be very limited. To the extent possible, the RI will be revised to include additional analysis of this information, along with additional discussion of the contaminant sources.

Because no boring logs are available for Geoprobe samples G-39, G-47, G-48 and RDGP-33 (only ground water samples were collected from these borings; soil samples were not collected), it is difficult to determine whether the source of the higher methylene chloride concentrations between Areas F and H is from DNAPL, residual DNAPL in the soil, or from bedrock ground water discharging upward into the overburden. Although no DNAPL was observed in the wells or other soil borings in this area, some staining was observed at 13.5 feet in soil boring B-5. This area will be re-investigated as part of the proposed supplemental RI for overburden soil.

Regarding EPA's comment about identification and treatment of remaining sources in the overburden, even if individual sources in the overburden could be targeted and removed, the Creek Liner/Treatment System will need to operate for the foreseeable future to capture overburden and bedrock ground water that flows to the creek. Additional treatment of any sources in the overburden will not appreciably reduce the amount of time that the Creek Liner/Treatment System needs to be in operation as approximately 76% of the mass flux to the Creek Liner/Treatment System is from the bedrock ground water.

#### **Comment No. 9**

*Section 7.1, p7-2: The summary under the DNAPL header, although accurate does not provide the full picture of observed and potential residual DNAPL. Figure 2-3 that was presented in the Draft Focused Remedial Investigation Report (4 May 1994) provided a better picture of DNAPL occurrence at the site. In particular, borings B-5, B-6 and B-7 were all identified as having potential DNAPL based on portioning analysis. These locations correspond to the higher VOCs contamination in soils and are within identified source areas.*

#### **Response to Comment No. 9**

Boring B-1 and piezometer PZ-19 were the only points where actual DNAPL was observed. No revisions to Section 7-1 are proposed. Additionally, all references to "potential DNAPL" will be removed from the final RI report, if no actual DNAPL was observed in the locations referenced.

#### **Comment No. 10**

*The report needs to include an Ecological Risk Assessment. A brief scoping meeting will be held via conference call to develop this part of the RI*

#### **Response to comment No. 10**

The PRP Group will meet with EPA to discuss the scope for an Ecological Risk Assessment (ERA) but we recommend that any ERA work be conducted on a parallel track with the RI/FS work.

#### **Comment No. 11**

*The RI needs to identify Remedial Action Objectives (RAOs) and EPA exposure limits. This will help identify the scope of the operable unit.*

#### **Response to comment No. 11**

RAOs are typically not discussed in the RI Report, but, rather, in the FS Report. The RAOs were presented in Section 2.2 of the FS Report, and are as follows:

- Continue to limit exposure to soil and overburden ground water that presents an unacceptable risk (carcinogenic risk greater than  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$  and hazard index exceeding 1.0) to human health and the environment, and
- Continue to prevent VOCs present in overburden ground water from impacting Little Elk Creek surface water.



### Comment No. 3

*Page x, 3rd paragraph; page 7-3, 5th bullet; page 7-4, 3rd paragraph: EPA is not convinced that the site is delineated. (E.G., See Appendix C, Boring log for PSB-12 showed that at a depth of 4 - 8 foot the OVA indicated a reading of 1000 PPM)*

### Response to comment No. 3

Acknowledging that USEPA is not convinced that the Site is delineated, the PRP Group has proposed that a supplemental RI be conducted to address USEPA's concern that a significant source exists beneath concrete slabs and asphalt cap.

In regard to boring PSB-12, the interval from 5.5 to 6 feet exhibited an OVA reading of 1000 ppm, using a flame ionization detector. However, this sample was then analyzed with the field GC and it did not contain detectable concentrations of VOCs. It is possible that the flame ionization detector responded to methane in this sample that would not be detected in a field GC analysis. In boring PSB-14, the OVA reading of >1,000 ppm was recorded from the saturated portion of the boring sample. However, soil samples from adjacent boring PSB-13 did not contain detectable concentrations of VOCs and also had a low OVA reading at a similar depth as boring PSB-14. It is possible that the high OVA reading in PSB-14 was also due to methane. Additionally, ground water samples from borings NTW-2, 3, and 4 were below detection limits for VOCs.

### Comment No. 4

*Page 5-4, 2nd paragraph; page 5-5, 3rd paragraph, last sentence: Please provide a typical cross section of the area being discussed.*

### Response to Comment No. 4

Revised cross section G-G' (Figure 4-6g-attached) depicts the overburden stratigraphy underlying Area F, and clearly shows the silt layer beneath this area is missing. With the silt layer missing, the hydraulic conductivity of the fill and the underlying sandy gravel created a preferred migration pathway vertically to the bedrock surface, and horizontally to the creek. This observation is consistent with the higher VOC concentrations in this area and the presence of DNAPL in piezometer PZ-19, which is directly downgradient of Area F.

A similar cross section of the former Evaporation Lagoon (Figure 4-5h, attached) is provided and will also be included in the revised RI report.

✓ **Comment No. 5**

*Page 7-5: "Slightly" should be deleted. Residential wells have not been evaluated yet, and these conclusions also depend on whether ground water migration has actually been prevented.*

**Response to Comment No. 5**

The word "slightly" will be deleted from the third and fourth sentences on this page.

**Comment No. 6**

*Page x, 3rd paragraph; Table 6-3; end of Table 6-5; Section 6.2.2; page 7-4, 5th paragraph: Residential wells could not yet be evaluated because the residential well data submitted to EPA is still incomplete. However, preliminary screening shows that there are site-related VOCs in residential wells at levels above RBCs. The residential well data should be submitted in full and should undergo a baseline risk assessment.*

**Response to comment No. 6**

Quarterly residential well sampling has been on-going at the Site since 1995 with the results submitted to EPA each quarter. To supplement the residential analytical data, Table S-6 (attached) was prepared that summarizes the depths of the residential wells that have been sampled, if known. This table will be added to the revised RI report.

Four VOCs have been detected in residential well ground water at concentrations exceeding RBCs. These include chloroform, 1,2-dichloroethane, 1,1-dichloroethene and vinyl chloride. Although the maximum-detected concentrations of 1,2-dichloroethane, 1,1-dichloroethene and vinyl chloride were below their respective MCLs, all four of these COPCs were evaluated quantitatively in the *Revised Human Health Risk Assessment Report* included with this submittal. Exposure scenarios for current off-site adult and child resident exposure to residential well ground water were added to the baseline human health risk assessment.

✓ **Comment No. 7**

*Page x, last paragraph: In the 2nd sentence of this paragraph, delete "slightly."*

#### Response to Comment No. 7

it was on page x,  
but never mind

ERM assumes that this comment applies to the next to last paragraph on page xi, as the word slightly does not exist on the page that was referenced. The word "slightly" will be deleted from the second sentence in the next to last paragraph on page xi.

#### Comment No. 8

Page x, last paragraph: The assertion in the 3rd sentence cannot be confirmed without defining "contaminated" or "impacted" and describing the extent of the asphalt cover.

#### Response to Comment No. 8

"The onsite pavement is preventing direct contact with exposure to contaminants." S.W.S.

ERM requests that EPA clarify this comment as there is no discussion of an asphalt cover in this paragraph.

#### Comment No. 9

Page 1-1, 5th paragraph: It is the Agency's prerogative to determine the integral components of the final remedy.

#### Response to Comment No. 9

check w/ Rob

It has always been the PRP Group's understanding that USEPA viewed the Creek Liner/Treatment System as part of the final remedy for the Site.

#### Comment No. 10

10. Page 2-4, 7th bullet; Section 5.4.2; page 5-11, 3rd paragraph: It is not necessarily true that RDGP-10 is a false positive or unrepresentative of the eastern water. Note that DGP-6 (also on the east side of the creek) had significant VOCs, and RDGP-8 had some VOCs also.

#### Response to Comment No. 10

The text of both of the referenced report sections will be revised in the RI report to include the VOC detections in pre-design borings RDGP-6 and RDGP-8. However, the possibility that the contamination in boring RDGP-10, if not a false positive, may be very limited to the immediate area surrounding this boring was already included on page 5-11. This is based on the lack of VOC detections in the ground water in adjacent borings EW-1 and EW-2 that were installed to verify

the detections detected in RDGP-10. Because both possibilities were included in the interpretation of the analytical result for RDGP-10, no changes to the text of this section of the RI report are proposed.

NO. Page 5-11 didn't even mention RDGP-6

**Comment No. 11**

Section 2.5.1 will need to be reevaluated when all the residential well data have been compiled.

**Response to Comment No. 11**

data don't match unitary examples!

The conclusions stated in Section 2.5.1 considered all the residential well data at the time the draft RI report was prepared. Although the residential well sampling is on-going, the residential well analytical data collected since the draft RI Report was submitted to EPA has not changed significantly from the conclusions written in Section 2.5.1. However, to aid EPA in their evaluation of the residential wells, a summary table of the residential well depths (Table 5-6) has been attached and will be included in the revised RI report. Additionally, a copy of the most recent residential well quarterly sampling results has also been included.

where?

✓ **Comment No. 12**

Page 5-1 refers to 5 overburden monitoring wells. Please list them by well number so it is clear which 5 wells are being discussed.

**Response to Comment No. 12**

This is a typographical error. Six overburden monitoring wells were sampled during the various Site investigations. These include MW-2, MW-3, MW-9, MW-10, MW-11 and MW-12. The text of page 5-1 will be revised to include this information.

**Comment No. 13**

Table 5-1: The RBCs for methylene chloride, 1,1,1-trichloroethane (111TCA), trichloroethene (TCE), and tetrachloroethene (PCE) should be 85000, 2200, 58000, and 12000 ug/kg, respectively. The SSLs should also be shown.

new  
111TCA  
TCE  
PCE  
2/12/02

Response to Comment No. 13

Table 5-1 was revised (see attachments) to reflect the revised RBCs for methylene chloride and trichloroethene. MDE residential soil standards for tetrachloroethene and 1,1,1-trichloroethane were used because they are lower than current RBCs. For the purposes of the RI, the analytical data was screened against Region III RBCs/MDE soil cleanup standards for comparative purposes only and not for Risk Assessment purposes, so 10% of the non-carcinogenic RBCs were not listed in this table. The appropriate Risk Assessment tables were revised using the appropriate RBCs consistent with Region III risk assessment procedures.

Comparison of the soil analytical data to SSLs is not typically performed in the RI; hence, SSLs were not included on the data summary tables and no discussion of such was included in the RI text. SSL comparisons are typically performed during the FS after Preliminary Remediation Goals (PRGs) are developed in the Human Health Risk Assessment. For these reasons, SSLs will not be included in the RI data summary tables.

Comment No. 14

Table 5-2:

- a) The residential RBCs for 2-butanone, vinyl chloride, and xylene should be 4700000, 90, and 16000000 ug/kg, respectively. The industrial RBC for vinyl chloride should be 7900 ug/kg.
- b) The residential RBCs for anthracene, butylbenzyl phthalate, dibutyl phthalate, diethyl phthalate, dimethyl phthalate, nitrobenzene, dioctyl phthalate, and phenol should be 2.3E6, 1.6E6, 780000, 6.3E6, 7.8E7, 3.9E3, 160000, and 4.7E6 ug/kg, respectively. The industrial RBCs for dibutyl phthalate, dimethyl phthalate, fluoranthene, fluorene, nitrobenzene, and dioctyl phthalate should be 2E7, 2E9, 8176000, 8176000, 102200, and 4100000 ug/kg, respectively.
- c) The residential RBCs for Aroclor 1016, delta-BHC, alpha-chlordane, gamma-chlordane, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, methoxychlor, and toxaphene should be 550, 350, 1800, 1800, 47000, 47000, 47000, 2300, 2300, 2300, 39110, and 580 ug/kg, respectively. The industrial RBCs for delta-BHC, alpha-chlordane, gamma-chlordane, DDT, endosulfan I, endosulfan II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and toxaphene should be 3200, 16000, 16000, 17000, 1200000, 1200000, 1200000, 61000, 61000, 61000, and 5200 ug/kg, respectively.

- d) The residential RBCs for antimony, cadmium, chromium, lead, and mercury should be 3.1, 3.9 (or 7.8), 23, 400, and 0.78 mg/kg, respectively. The industrial RBCs for chromium and mercury should be 610 and 20 mg/kg, respectively.

#### Response to Comment No. 14

Table 5-2 was revised (see attachments) using the updated (October 2001) RBCs as noted above. It was also noted that several of the RBCs quoted above by USEPA are 10% of the listed Region III RBC for several non-cancer compounds. While this is consistent with USEPA Human Health Risk Assessment procedures, RBCs were included in the RI analytical data summary tables for comparative purposes only, and is not for the purpose of conducting the Human Health Risk Assessment. Therefore, the full currently-listed RBC for each of the compounds was included in Table 5-2 (attached), and the appropriate risk assessment tables (Tables 6-1 through 6-52) were revised to include the appropriate RBCs consistent with USEPA risk assessment procedures.

OK  
- been it from  
the reference  
2/16/02

#### Comment No. 15

Lead should be a soil COPC.

#### Response to Comment No. 15

Lead will be included as a COPC in the revised Risk Assessment.

#### Comment No. 16

The soil concentrations should also be compared to SSLs for migration to ground water. The following chemicals exceed SSLs: acetone, benzene, 2-butanone, carbon tetrachloride, chlorobenzene, chloroethane, chloroform, 1,1-dichloroethane (11DCA), 1,2-dichloroethane (12DCA), 1,1-dichloroethene (11DCE), total 1,2-dichloroethene (tot12DCE), ethylbenzene, methylene chloride, 4-methyl-2-pentanone, 1,1,2,2-tetrachloroethane (1122PCA), PCE, toluene, 111TCA, 112TCA, TCE, vinyl chloride, xylenes, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, bis(2-chloroethyl)ether, carbazole, 4-chloroaniline, dibenz[a,h]anthracene, dibenzofuran, 1,2-dichlorobenzene (12DCB), 1,3-dichlorobenzene (13DCB), 1,4-dichlorobenzene (14DCB), 2,4-dimethylphenol (24DMP), hexachlorobenzene, hexachlorobutadiene, indeno[1,2,3-c,d]pyrene, isophorone, 2-methylnaphthalene, naphthalene, nitrobenzene, N,N-diphenylamine, 1,2,4-trichlorobenzene (124TCB), aldrin, beta-BHC, DDT, dieldrin, endosulfan II, endrin aldehyde, antimony, arsenic, barium, cadmium, chromium, copper, manganese, selenium, thallium, zinc.

#### Response to Comment No. 16

ERM assumes this comment refers to Table 5-2. Comparison of the soil analytical data to SSLs is not typically performed in the RI; hence, SSLs were not included on the data summary tables and no discussion of such was included in the RI text. SSL comparisons are typically performed during the FS after Preliminary Remediation Goals (PRGs) are developed in the Human Health Risk Assessment. For these reasons, SSLs will not be included in the RI data summary tables.

same as #11

#### Comment No. 17

OK Table 5-3: The RBC for 111TCA should be 320 ug/l.

#### Response to Comment No. 17

According to the October 2001 Region III RBCs, the tap water RBC for 1,1,1-TCA is now 3,200 ug/l. In the RI, the ground water data were screened against full RBCs only (not 10% of the RBC) for comparative purposes only, not for risk assessment purposes. The appropriate RBCs will be used to conduct the actual Risk Assessment and those tables will be revised accordingly. Since the MCL for this compound (200 ug/l) is lower than the RBC, the MCL will be used in Table 5-3, as currently shown. The latest RBCs (October 2001) for TCE and PCE will be used and Table 5-3 has been revised accordingly (see attachments).

#### Comment No. 18

✓ Page 5-5, 5th paragraph; page 7-2, last bullet: The RBC for chlorobenzene was not exceeded.

#### Response to Comment No. 18

Page 5-5 will be revised to indicate that chlorobenzene exceeded the MDE residential soil standard, not the RBC, at boring ISB-1. However, the statement on page 7-2 is accurate in that chlorobenzene exceeded the MDE residential soil standard.

#### Comment No. 19

Section 5.3.2: A comparison to SSLs would also be useful.

same as #13

### **Response to Comment No. 19**

Comparison of the soil analytical data to SSLs is not typically performed in the RI; hence, SSLs were not included on the data summary tables and no discussion of such was included in the RI text. SSL comparisons are typically performed during the FS after Preliminary Remediation Goals (PRGs) are developed in the Human Health Risk Assessment. For these reasons, SSLs will not be included in the RI data summary tables.

### **Comment No. 20**

*Section 5.3.3: Six SVOCs exceed RBCs (benzo[b]fluoranthene is the other).*

### **Response to Comment No. 20**

Section 5.3.3 will be revised to indicate that benzo(b)fluoranthene exceeded the residential RBC in the shallow soil samples of borings PSB-1 and PSB-6.

### **Comment No. 21**

*Page 5-6, 2nd paragraph: The action of the VOCs on the naturally occurring metals should be discussed. If the metals have been altered by site conditions, they are not background.*

### **Response to Comment No. 21**

The presence of VOCs in the soil is not known to affect naturally occurring metals concentrations. No changes to this section of the RI are proposed.

### **Comment No. 22**

*Page 5-6, 3rd paragraph: This is not the recommended background procedure. Statistical testing using local background samples should be performed. The last paragraph on this page should also be deleted.*

### **Response to Comment No. 22**

The PRPs disagree that the last paragraph on page 5-6 should be removed. For the purposes of the RI, the inorganic concentrations of the soil samples were screened against Maryland Anticipated Typical Concentrations (ATCs) of background soil concentrations for comparative purposes only, and not for risk assessment purposes, since no background soil samples were available.

**Comment No. 23**

Table 5-4:

- 04 a) The RBCs for chlorobenzene, 1122PCA, and 111TCA should be 11, 0.05, and ~~20~~<sup>320</sup> ug/l, respectively. <sup>H</sup>
- b) The 1996 results for MW-10 should be included on this table.
- c) For MW-11, 1992, the cis-12DCE result of 1400 ug/l does not appear on the laboratory data sheet.
- d) For MW-11, 1996, the methylene chloride lab result was 170 B and the field result was 1452 ug/l, according to the lab data sheets. The cis-12DCE lab result was 2500 ug/l.
- e) For G-39, the result of 26000 shown under cis-12DCE should be under trans-12DCE.
- 04 f) The RBCs for 2-methylphenol (2MP), delta-BHC, endosulfan sulfate, endrin, endrin aldehyde, and endrin ketone, should be 180, 0.037, 22, 1.1, 1.1, and 1.1 ug/l, respectively. <sup>H</sup> ✓ ✓ ✓ ✓
- 04 g) For MW-11, 1996, there should be a result of 480 ug/l for 12DCB.
- ✓ h) 12DCB results for RDGP-3, RDGP-17, RDGP-22, RDGP-41, and RDGP-46 should be 700, ~~320~~, 390, 25000, and 5400 ug/l, respectively. ✓
- 04 i) The 13DCB result for RDGP-22 should be 6.1 ug/l.
- 04 j) 14DCB results for RDGP-17, RDGP-22, RDGP-41, and RDGP-46 should be 45, 65, 3300, and 700, respectively. ✓
- 04 k) The 1991 metals results shown in the table need to be replaced with the 3/92 validated results.
- 04 l) RBCs for chromium, lead, and mercury should be 11, 15, and 0.37 ug/l, respectively. <sup>H</sup> ✓ ✓
- 04 m) For MW-11, 1996, the total iron and manganese results should be 92300 and 1070 ug/l, respectively; the dissolved manganese result should be 13000 ug/l. ✓
- 04 n) For B5, the dissolved iron result should be 40400 ug/l. ✓

### Response to Comment No. 23

**Comments a, f, and l:** For the purposes of the RI, the ground water data was screened against the full RBCs (not 10% of the RBC) for comparative purposes only and not for risk assessment purposes. The appropriate RBC values will be used in the revised Risk Assessment. Table 5-4 (see attachments) was updated to include the most recent RBCs, as published by EPA Region III.

**Comments b, c, d and e:** Table 5-4 was revised to reflect these data. However, the field result for methylene chloride in MW-11 in 1996 is listed in the AGC Pre-Design Investigation Summary Report as 25U. Table 5-4 was revised to reflect this.

**Comments g, h, i and j:** The data cited by EPA are ground water samples collected by AGC in 1996 and are summarized in their Pre-Design Investigation Summary Report. However, these samples are not listed in the AGC report as being analyzed for semivolatiles organics. Please provide clarification on these comments.

**Comment k:** Table 5-4 was revised to include the March 1992 validated metals results.

**Comments m and n:** Table 5-4 was revised to reflect the cited data; however, the dissolved manganese concentration of 13,000 ug/l that was cited is in error as no dissolved manganese analysis was performed on sample MW-11 in 1996 by AGC. The cited concentration, however, corresponds to the dissolved iron concentration in this sample. Table 5-4 was revised to reflect this.

### Comment No. 24

*Page 5-7, 4th paragraph, 4th sentence: This sentence should be modified. Not all the methylene chloride lab data were B qualified; only the samples that were collocated with field data were flagged B.*

### Response to Comment No. 24

The referenced sentence will be modified in the revised RI report to read: "All of the methylene chloride laboratory results *that were collected along with field GC samples* were "B" qualified, meaning that the *laboratory* detection was qualitatively invalid."

✓ **Comment No. 25**

*Sections 5.4.3 and 5.4.4: The analysis did not look for SVOCs or pesticides on the east side of the creek; therefore the last sentence in each of these paragraphs should be qualified.*

**Response to Comment No. 25**

To address this comment, the following sentences will be added to the end of Section 5.4.3 in the revised RI report. *"Although SVOCs were not evaluated in ground water east of the creek, the limited VOC impacts in the overburden ground water in that area indicate that little contamination has migrated east of the creek. For this reason, SVOCs are not expected to be present in overburden ground water east of the creek."*

The following sentence will also be added to the end of Section 5.4.4. *"Although they were not evaluated east of the creek and because of their limited impacts in on-site ground water, pesticides are not expected to be present in the overburden ground water east of the creek."*

**Comment No. 26**

*Page 5-12: Barium also exceeds the RBC, and a large number of metals exceed the RBC for total metals. Therefore, these statements should be modified.*

**Response to Comment No. 26**

None of the ground water samples presented in Table 5-4 exceed the current RBC (October 2001) for barium, which is 2,600 ug/l (the table has been revised to reflect this updated RBC), including the samples collected from perimeter geoprobe samples NTW-1, ETW-1, STW-1 and STW-3, which are discussed on page 5-12. Regarding RBC exceedances for total metals, page 5-12 already states that "[a] number of metals exceeded MCLs or RBCs/MDE Standards in the on-site wells sampled in 1991-92." No text changes are proposed for page 5-12.

**Comment No. 27**

*Please indicate which samples collected during the RI investigation were not included in the risk assessment or shown in the data tables.*

**Response to Comment No. 27**

The *Revised Human Health Risk Assessment Report* included with this submittal documents which data were included in the baseline Human Health Risk Assessment.

✓ **Comment No. 28**

*Geoprobe metals results for ground water should not be used in the risk assessment.*

**Response to Comment No. 28**

The Agency's comment is acknowledged and GeoProbe® metals results in ground water were not included in the *Revised Human Health Risk Assessment Report* included with this submittal.

✓ **Comment No. 29**

*Section 6.2 should specify: if lab or field data were used in the risk assessment (lab data are preferred), and if total or dissolved metals were used and why.*

**Response to Comment No. 29**

The Agency's comment is acknowledged. Only laboratory analytical data were used in the risk assessment. Section 6.2 has been clarified to indicate that only laboratory analytical data and only total metals data, not dissolved metals, were used in the *Revised Human Health Risk Assessment Report* (attached).

✓ **Comment No. 30**

Table 6-1:

- a) *The residential screening values for lead, mercury, and thallium should be 400, 0.78, and 0.55 mg/kg, respectively.*
- b) *The industrial screening values for aluminum, chromium, mercury, and thallium should be 2E5, 610, 20, and 14 mg/kg, respectively.*
- a) *Lead should be a COPC.*

### **Response to Comment No. 30**

The Agency's comments are acknowledged. These comments were incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### **✓ Comment No. 31**

Table 6-2:

- a) The maximum result for carbon disulfide shown here (675 ug/l) does not appear on Table 5- 4.
- ✓ b) Benzyl chloride (maximum 7.6 ug/l, RBC 0.06 ug/l, COPC), 1,1,2-trichloro-1,2,2-trifluoroethane (maximum 11000 ug/l, RBC 5900 ug/l, COPC), chloromethane (RBC 2.1ug/l, not COPC), bis(2-ethylhexyl) phthalate (RBC 4.8 ug/l, not COPC), DDE (RBC 0.2 ug/l, not COPC), and alpha-chlordane (RBC 0.19 ug/l, not COPC) should be added to this table.
- c) The new vinyl chloride RBC is 0.015 ug/l.
- ✓ d) The metals should be redone, in accordance with the change to the 1991 inorganic data. The COPCs should be as follows: total, aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, manganese, lead, nickel, vanadium, zinc; ~~dissolved, arsenic, barium, iron, manganese.~~

### **Response to Comment No. 31**

The Agency's comments are acknowledged. These comments were incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### **✓ Comment No 32**

Table 6-4 should be adjusted in accordance with previous comments.

### **Response to Comment No. 32**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### Comment No. 33

Table 6-5:

a) Soil:

✓ Chloroethane was detected in soil (maximum 0.012).

4-Chlorophenyl-phenylether has no RBC.

✓ 124TCB exceeds the RBC and is a COPC.

✓ Beryllium should be added to this list.

b) Ground water:

Benzyl chloride, 14DCB, trans-12DCE, 13DCB, 2-methylnaphthalene, naphthalene, and 124TCB exceed the RBCs and are COPCs. Chloromethane is below the RBC. The metals should be redone, in accordance with the change to the 1991 inorganic data. The COPCs should be as follows: total, aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, manganese, lead, nickel, vanadium, zinc; dissolved, arsenic, barium, iron, manganese.

### Response to Comment No. 33

The Agency's comments are acknowledged and were incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

### Comment No. 34

Table 6-8:

✓ a) Benzyl chloride and 1,1,2-trichloro-1,2,2-trifluoroethane should be added to this table.

b) ✓ The Q/C that was used to derive the VFs should be identified.

c) ✓ VFs for acetone (1.2E4), benzene (2700), carbon disulfide (1200), chlorobenzene (6300), chloroform (2900), 11DCA (2800), 12DCA (4900), 11DCE (1400), cis-12DCE (2800), trans-12DCE (3000), ethylbenzene (4000), methylene chloride (2400), toluene (3500), 111TCA (2400), 112TCA (7500), TCE (2600), xylenes (5700), bis(2-chloroethyl)ether (1.3E4), 4-chloroaniline (2.8E5), 2-chlorophenol (3E4), 12DCB (1.1E4), and naphthalene (5.5E4) can be derived.

d) ✓ The molecular weight, t\*, B, and tau should also be displayed.

- ✓ e) 111TCA has a provisional RfDi of 6.3E-1 mg/kg/day.
- ✓ f) The vinyl chloride CSFs should be applied as shown in the Toxicological Review (on IRIS).
- ✓ g) 13DCB has a provisional oral RfD of 3E-2 mg/kg/day.
- ✓ h) Cadmium has an oral-food RfD of 1E-3 mg/kg/day.
- (i) The non-food RfD for manganese is 2E-2 mg/kg/day; the mercury RfD should be 1E-4 mg/kg/day. *They used 2E-1*
- ✓ j) The cobalt provisional RfD is now 2E-2 mg/kg/day.
- (k) PAHs typically do not receive oral-to-dermal adjustment for the CSF because they can act locally on the skin. *they still need dermal SFs*
- ✓ l) For Aroclors, the dermal CSF that is recommended for use with dermal exposure when an absorption factor has been applied (as it has here) is 2 per mg/kg/day, not 4.
- (m) According to the ATSDR Toxicological Profile, the oral absorption factor for dieldrin could be 0.9. *OK, I made, but ref Dd was not used accordingly*
- (n) According to the ATSDR Toxicological Profile, the oral absorption factor for aluminum should be 0.005.
- ✓ o) According to IRIS, the absorbed (e.g., dermal) RfD for cadmium should be 2.5E-5 mg/kg/day.
- ✓ p) The oral absorption factors for iron, manganese, and mercury should be 1.
- ✓ q) The following permeability coefficients should be corrected: acetone, 6E-4; 4-methyl-2-pentanone, 4E-3; 4-chloroaniline, 6E-3; 2-methylnaphthalene, 0.14; Aroclor 1242, 0.7; BHCs, 0.018. The metal permeability coefficients that are currently shown as 1.55E-3 should be 1E-3 (from the 1992 Dermal Guidance).

#### Response to Comment No. 34

The Agency's comments are acknowledged and were incorporated into the Revised Human Health Risk Assessment Report included with this submittal, with two exceptions. Volatilization Factors were calculated only for those analytes retained as COPCs in soil. The table was footnoted to reflect that Volatilization

Factors were not calculated for all VOCs and SVOCs in soil. Also, since Permeability Coefficients were obtained directly from USEPA's *Dermal Exposure Assessment: Principles and Applications*, molecular weight,  $t^*$ , B and tau were not included in the table.

what if a chem would be a safe way?  
but they're used in shoveling;  
+ dermal risk to D which  
eqn to use

**Comment No. 35**

Section 6.5.1: The cancer equation for risks above  $1E-2$  ( $1 - \exp(-\text{Dose} \times \text{CSF})$ ) should also be shown.

RAGS Vol I Part A page 8-11 eqn: box in upper  
left corner of that  
page  
instructs: page 8-6, 1st ft in  
rt-hand column

**Response to Comment No. 35**

The cancer equation described herein is not a standard algorithm described in RAGS Parts A or B. This equation was not used in estimating carcinogenic risks in the risk assessment, and the Agency has not indicated where in subsequent comments, this algorithm should be used. The recommended algorithm was not incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 36**

Table 6-6:

new RA Table 2-6

- ✓ a) If B data are excluded from the data set, the n for arsenic would be 10.
- ✓ b) The mercury UCL and EPC should be 1.3 mg/kg.
- ✓ c) a) For lead, the average concentration is used in the blood-lead models.

**Response to Comment No. 36**

The Agency's comments are acknowledged and were incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal. Blood-lead modeling was not done as part of the baseline human health risk assessment.

yes, then did this "lead" assess-  
not sure why.  
why not do the modeling?

### Comment No. 37

Table 6-7:

- new R7 Feb 2-7*
- ✓ a) Carbon disulfide does not appear to be a COPC.
- ✓ b) Benzyl chloride (EPC maximum, 0.0076 mg/l) and 1,1,2-trichloro-1,2,2-trifluoroethane (EPC maximum, 11 mg/l) should be added.
- Small review as part of SA review*
- c) If B data are excluded from the data set and the data are changed as noted in Comment #23 (referring to Table 5-4), the following n would be derived: acetone, 18; benzene, 27; chloroform, 27; cis-12DCE, 15; trans-12DCE, 15; ~~tot12DCE~~, 12; methylene chloride, 6; 12DCB, 14; 13DCB, 9; 14DCB, 12; 2-methylnaphthalene, 8; naphthalene, 8; 124TCB, 8.
- they have LN 5.2 mg/l*
- d) The following organic EPCs should be changed: ~~tot12DCE~~, 28 mg/l (normal); 112TCA (0.18 mg/l, maximum); ~~bis(2-chloroethyl ether)~~, 0.159 mg/l (normal); ~~14DCB~~, 2.8 mg/l (lognormal); ~~alpha-BHC~~, 0.000037 (normal); ~~beta-BHC~~, 0.00013 (lognormal); ~~delta-BHC~~, 0.00126 (lognormal).
- e) The inorganic data need to be recalculated in light of the new 1991 metals results. The EPCs for these metals should be as follows:
- Total: aluminum, ~~178~~ mg/l (maximum); antimony, 0.142 mg/l (maximum); arsenic, 0.0102 mg/l (lognormal); barium, 0.852 mg/l (lognormal); cadmium, 0.0314 mg/l (lognormal); chromium, 0.39 mg/l (maximum); ~~lead~~, 0.2 mg/l (average); nickel, 0.648 mg/l (lognormal); vanadium, 0.438 mg/l (maximum); zinc, 2.4 mg/l (lognormal); cobalt, 0.319 mg/l (lognormal); copper, 1.28 mg/l (maximum); beryllium, 0.0036 mg/l (lognormal). Iron and manganese remain with the EPCs currently shown on the table.
- Dissolved: arsenic, 0.007 mg/l (normal); barium, 0.392 mg/l (normal); iron, 74.7 mg/l (normal); manganese, 10.45 mg/l (lognormal)

### Response to Comment No. 37

The Agency's comments are acknowledged and were incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

Comment No. 38

Table 6-9: Children are assumed not to shower, but rather to take baths (therefore, exposure would be dermal and ingestion only). The mechanism of construction worker's inhalation exposure to ground water is not clear. (Table 6-37 should be deleted.)

Response to Comment No. 38

The Agency's comment addressing child exposure to ground water while bathing instead of showering was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal. Since the Agency recommended that dermal contact with COPCs in ground water be retained as a viable exposure pathway in the risk assessment, a construction worker would be equally if not more easily exposed to COPCs in ground water via inhalation of vapors from ground water into the ambient breathing zone air. Therefore, the inhalation of COPCs volatilized from ground water was conservatively retained as a viable exposure pathway for the construction worker in the *Revised Human Health Risk Assessment Report* included with this submittal.

Comment No. 39

Tables 6-10, 6-11, 6-12, 6-16, 6-17, 6-18, 6-21, 6-22, 6-23, 6-24, 6-25, 6-26, 6-27, 6-28, 6-29, 6-33, 6-34, and 6-35: The units for the intake factors should be (kg chemical/kg body weight-day).

Response to Comment No. 39

The Intake Factor units on these tables were revised to read "kg soil/kg body weight-day". The Agency's recommendation to change the units to "kg chemical/kg body weight-day" is inaccurate. The Intake Factor is multiplied by the EPC, in units of mg chemical/kg soil, on these tables. Appropriate cancellation of units is possible if the Intake Factor units are revised to read "kg soil/kg body weight-day". These changes were incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

Comment No. 40

Tables 6-12, 6-18, 6-23, 6-26, 6-29, and 6-35: The soil adherence factor units are rather high (this would correspond to muddy soil), but do not need to be changed for the RME assessment. The absorption factor for VOCs (0.0005 to 0.03) should be shown.

**Response to Comment No. 40**

Although the Agency's recommendation is less conservative than the approach taken in the risk assessment, it was conservatively assumed that 100% dermal absorption of VOCs would occur.

OK if you want to assume that -  
BUT SHOW THE FACTOR

✓ **Comment No. 41**

✓ Tables 6-13, 6-30, and 6-36: The units for the intake factors should be (L/kg-day).

**Response to Comment No. 41**

The Intake Factor units on these tables were revised to read "L water/kg body weight-day".

✓ **Comment No. 42**

Tables 6-14 and 6-31: Instead of this model (which is usually used only for screening because it assumes all chemicals volatilize equally), the Foster and Chrostowski model should have been used.

**Response to Comment No. 42**

The Foster and Chrostowski shower model was used to evaluate inhalation exposure to organics while showering in the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 43**

now 21 Tables 4-7, 4-12, 4-25, 4-30

Tables 6-15, 6-20, 6-32, and 6-38: For organics, the non-steady-state model should also be used.

**Response to Comment No. 43**

The Foster and Chrostowski shower model was used to evaluate inhalation exposure to organics while showering in the *Revised Human Health Risk Assessment Report* included with this submittal.

doesn't add res the comment, which is a bit element  
they still include only steady state

**Comment No. 44**

Table 6-19: The mechanism of construction worker's inhalation exposure to ground water is not clear.

it is still not clear! what mechanism? used? will I create at RA

**Response to Comment No. 44**

Please refer to the response provided for Comment 38.

**Comment No. 45**

Table 6-26: The title of this table should refer to "Dermal" rather than "Inhalation."

**Response to Comment No. 45**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 46**

Tables 6-27, 6-28, 6-29, 6-33, 6-34, and 6-35: The exposure frequency should be 350 days/yr.

**Response to Comment No. 46**

The default USEPA exposure frequency of 350 days/yr for residential receptors is overly conservative given that inclement weather, in general, would be expected to occasionally occur at the site, effectively discouraging future on-site adult and child residents from prolonged contact with outdoor soils on these days. The reduced exposure frequency of 104 days/yr and 274 days/yr were assumed to be more reflective of reasonably anticipated exposure patterns. However, as part of the RME assessment, the exposure frequency was increased to 350 days/yr in the *Revised Human Health Risk Assessment Report* (attached).

**Comment No. 47**

Table 6-29: The skin surface area should be 5000 cm<sup>2</sup>.

#### Response to Comment No. 47

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 48

*4-4 4-7 4-10 4-12 4-15 4-18 4-21 4-25 4-28 4-30*  
Tables 6-12, 6-15, 6-18, 6-20, 6-23, 6-26, 6-29, 6-32, 6-35, and 6-38: The Exposure Handbook date should be 1997.

#### Response to Comment No. 48

*Says 1998 all 1998, not made except on 1 table*  
The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 49

Table 6-38: The duration of the child's bath is typically 0.33 hr.

#### Response to Comment No. 49

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 50

Table 6-39, Soil

*SEE LETTER MARKED NEW RATIOS -*  
It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). \*See original document for table.

#### Response to Comment No. 50

*most do not actually make!*  
The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 51

Table 6-39, Ground water

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). \*See original document for table.

✓ The oral cancer risks for beryllium, cadmium, and chromium should be deleted. It is not clear why total metals were used for ingestion and dissolved metals for inhalation and dermal. One form should be used consistently for all exposure routes.

Response to Comment No. 51

see letter markup

most DS not made

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

Comment No. 52

now RA Tab 5-2

Table 6-40, Soil

✓ It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). \*See original document for table.

see letter markup

most DS not made

Response to Comment No. 52

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

Comment No. 53

RA  
Tab 5-2

Table 6-40, Ground water

see letter markup - no DS made

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). The inhalation risk was not included because it is not clear what kind of exposure that was. \*See original document for table.

Response to Comment No. 53

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

**Comment No 54**

Table 6-41, Soil

new RA Tab 5-3  
most of this table  
disappeared  
no As made except  
splitting VF + 1' CF

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). \* See original document for table.

**Response to Comment No 54**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

**Comment No. 55**

Table 6-42, Soil

new RA Tab 5-4  
see letter, markup some As not made

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

**Response to Comment No.55**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

**Comment No. 56**

Table 6-43, Soil

new RA Tab 5-5  
see letter markup  
some As not made

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

**Response to Comment No. 56**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

**Comment No. 57**

Table 6-43, Ground water

new RA Tab 5-5  
see letter marking

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). \*See original document for table.

✓ The oral cancer risks for beryllium, cadmium, and chromium should be deleted. It is not clear why total metals were used for ingestion and dissolved metals for inhalation and dermal. One form should be used consistently for all exposure routes.

**Response to comment No. 57**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

**Comment No. 58**

Table 6-44, Soil

new RA Tab 5-6  
see letter marking

✓ It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

**Response to Comment No. 58**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

**Comment No. 59**

Table 6-44, Ground Water

new RA Tab 5-6  
see letter marking

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). Inhalation should be deleted (children are assumed to take baths). ). \*See original document for table.

The oral cancer risks for beryllium, cadmium, and chromium should be deleted. It is not clear why total metals were used for ingestion and dissolved metals for inhalation and dermal. One form should be used consistently for all exposure routes. ✓

#### Response to Comment No.59

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 60

Table 6-45

new RA table 5-9  
most AS not made

Using the above adjustments, this table would be as follows. ). *\*See original document for table.*

#### Response to Comment No. 60

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 61

Table 6-46, Soil

new RA table 5-10  
see letter

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). *\*See original document for table.*

#### Response to comment No. 61

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 62

Table 6-46, Ground water

new RA table 5-10  
see letter

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). Dissolved metals, other than the four shown below, should be deleted. ). *\*See original document for table.*

It is not clear why total metals were used for ingestion and dissolved metals for inhalation and dermal. One form should be used consistently for all exposure routes.

#### Response to Comment No. 62

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 63

Table 6-47, Soil

now RA 5-11

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

#### Response to Comment No. 63

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 64

Table 6-47, Ground water

now RA 5-11  
see letter

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). Dissolved metals, other than the four shown below should be deleted. Inhalation was detected because the scenario was not clear. ). \*See original document for table.

#### Response to Comment No. 4

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

#### Comment No. 65

now RA 5-12

Table 6-48, Soil

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

### Response to Comment No. 65

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### Comment No. 66

Table 6-49, Soil

new RA Tab 5-13  
see letter

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

### Response to Comment No. 66

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### Comment No. 67

Table 6-50, Soil

new RA Tab 5-14

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

### Response to Comment No. 67

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### Comment No. 68

Table 6-50, Ground water

new RA Tab 5-14  
see letter

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). Dissolved metals, other than the four shown below, should be deleted. ). \*See original document for table.

It is not clear why total metals were used for ingestion and dissolved metals for inhalation and dermal. One form should be used consistently for all exposure routes.

**Response to comment No. 68**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 69**

Table 6-51, Soil

new RA tab 5-45  
see letter

It is preferable to separate the soil risks for VF and PEF. The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). ). \*See original document for table.

**Response to Comment No. 69**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 70**

Table 6-51, Ground Water

new RA Tab 5-15  
see letter

The following corrections are recommended (if a risk is not specifically shown here, it is considered correct on the original table). Dissolved metals, other than the four shown below, should be deleted. Inhalation was deleted because young children are assumed to take baths. ). \*See original document for table.

✓ It is not clear why total metals were used for ingestion and dissolved metals for inhalation and dermal. One form should be used consistently for all exposure routes.

**Response to Comment No. 70**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 71**

Table 6-52

new RA tab 5-18  
see letter

Using the above adjustments, this table would be as follows. \*When separated by target organ, HIs do not exceed 1. ). \*See original document for table.

1940  
31  
2071

2290	2200
264	305
2554	11
19	3266
2573	6
	3272

### Response to Comment No. 71

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### Comment No. 72

Page 6-13, 2nd paragraph: In the 3rd line, the extra "hypothetical" should be deleted. In the 6th line, the respective risks should be 1.7E-1, 2.6E-4, 3.4E-1, and 1.2E-2. In the last line, the utility worker risk should be 2.3E-7.

### Response to Comment No. 72

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### Comment No. 73

OK Page 6-13, 3rd paragraph: The last line should be modified; the future residential risk (adult plus child) would be 2E-4, exceeding the risk range.

### Response to Comment No. 73

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

### Comment No. 74

now p 16, 2nd to last ft  
2013  
Page 6-14, 3rd paragraph: In the 2nd line, the extra "hypothetical" should be deleted. In the 5th line, the respective HIs should be 1980-2024, 34-41, 3173-3272, and 2422-2627. 25 13  
(The ranges occur because there are options to use either cis- and trans-12DCE, or tot12DCE; and to use either total or dissolved metals.) In the last sentence of this paragraph, the trespasser HI should be 1.4 and the utility worker HI should be 0.14, so the risks are "at or below" 1.

### Response to comment No. 74

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 75**

Page 6-14, 4th paragraph: The last line should be modified; the future residential HIs exceed 1 (adult 6, child 19).

*they added C + A*

**Response to Comment No. 75**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

✓ **Comment No. 76**

Page 6-16, 6th paragraph: The last sentence should be modified to, "This can also result in a conservative estimate of risk, but it does not always (e.g., TCE can degrade to the more potent carcinogen vinyl chloride)."

**Response to comment No. 76**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

✓ **Comment No. 77**

Page 6-17, 3rd paragraph: The mean soil lead concentration is 687 mg/kg, which exceeds 400 mg/kg.

**Response to Comment No. 77**

The Agency's comment is acknowledged and was incorporated into the Revised Human Health Risk Assessment Report included with this submittal.

**Comment No. 78**

Page 6-17, 4th paragraph: This paragraph should be revised to read, "Lead was detected in total ground water samples at concentrations up to 1320 ug/l, with a mean of approximately 200 ug/l. Dissolved concentrations, however, were much lower. If child residents were exposed to the average amount of lead in soil and total ground water at this site, their geometric mean blood level would be approximately 17 ug/dL, with 83.6% exceeding a blood level of 10 ug/dL. EPA's goal is for no more than 5% of a population to exceed 10 ug/dL."

*mean used ug/l*

**Response to comment No. 78**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 79** *will check*

*Page 6-17: The last paragraph on this page will need to be rewritten when all the residential well results have been compiled.*

**Response to Comment No. 79**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 80**

*Page 6-18, 3rd bullet: It is not clear why or how "status of local public water supplies" contributes to the uncertainty of the risk estimates.*

**Response to comment No. 80**

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 81**

*Section 6.6.4: In this section, the results of the split samples should be assessed.*

**Response to Comment No. 81**

*then just removed section*

The Agency's comment is acknowledged and was incorporated into the *Revised Human Health Risk Assessment Report* included with this submittal.

**Comment No. 82**

*Page 7-3, 2nd bullet; page 7-4, 2nd paragraph; page 7-5: Define "impacted." Also, describe the extent of the asphalt.*

**Response to Comment No. 82**

The term "impacted" will be replaced with "site-related<sup>no</sup> contaminants in the revised RI report." The entire developed portion of the Site on the west side of the creek is covered with asphalt, from Providence Road to the west side of the former Evaporation Lagoon.

**Comment No. 83**

Page 7-4, 2nd paragraph: SSLs are also exceeded.

same as #13

**Response to Comment No. 83**

Comment acknowledged. However, for the purposes of the RI report, comparisons of the soil data to SSLs were not performed as this is typically done in the FS after PRGs are developed in risk assessment.

**Comment No. 84**

✓ Page 7-4, 6th paragraph: The description of the Creek Liner is unclear. Is it preventing ground water discharge or ground water exposure?

**Response to Comment No. 84**

This paragraph will be revised in the revised RI report as follows. The Creek Liner/Treatment System is preventing ground water from discharging to the creek.

## *Figures*

AR302997

Figure 2-2a

Little Elk Creek Surface Water Total VOC Concentrations  
 Galaxy/Spectron Site  
 Elkton, Maryland

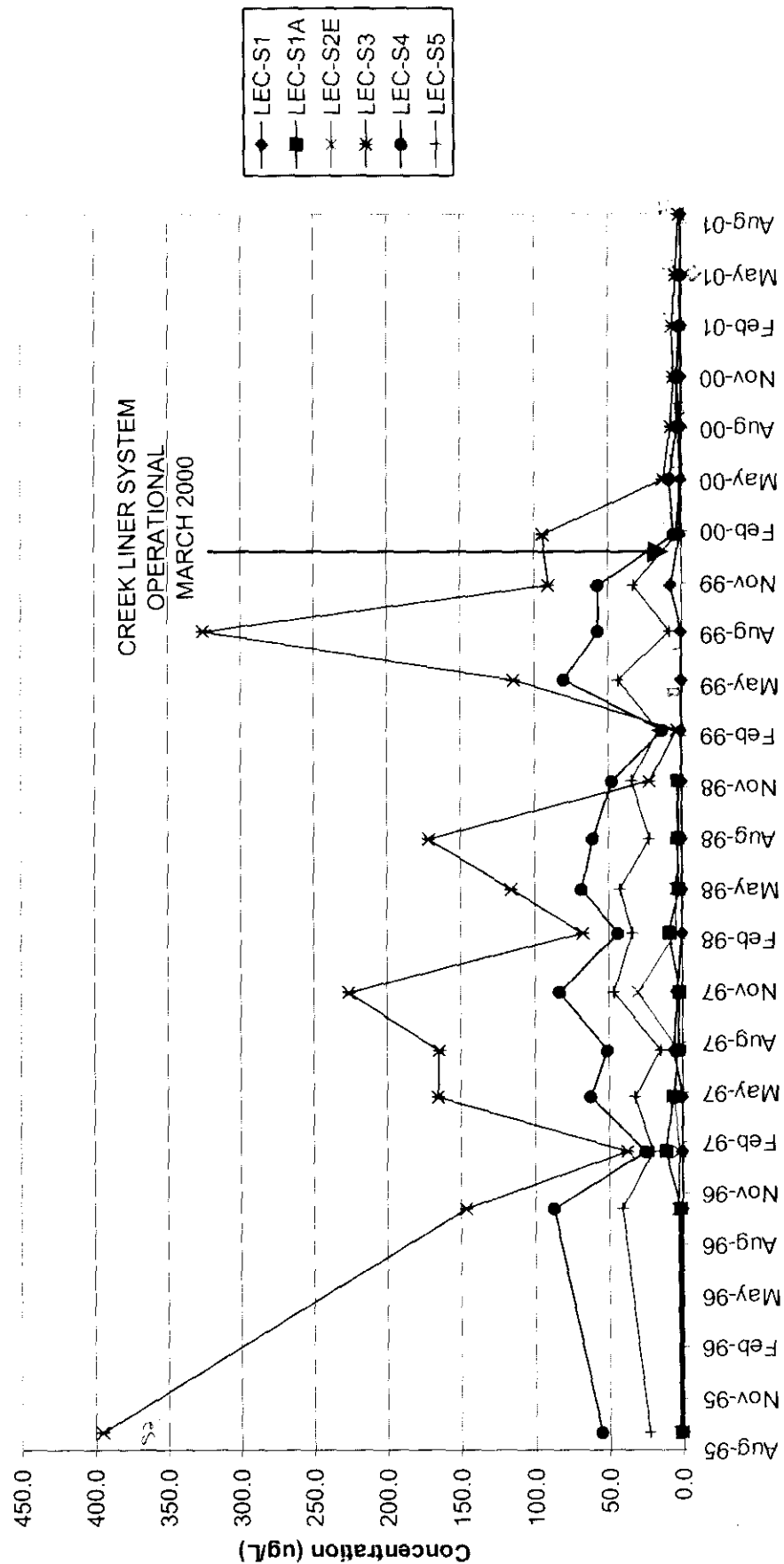
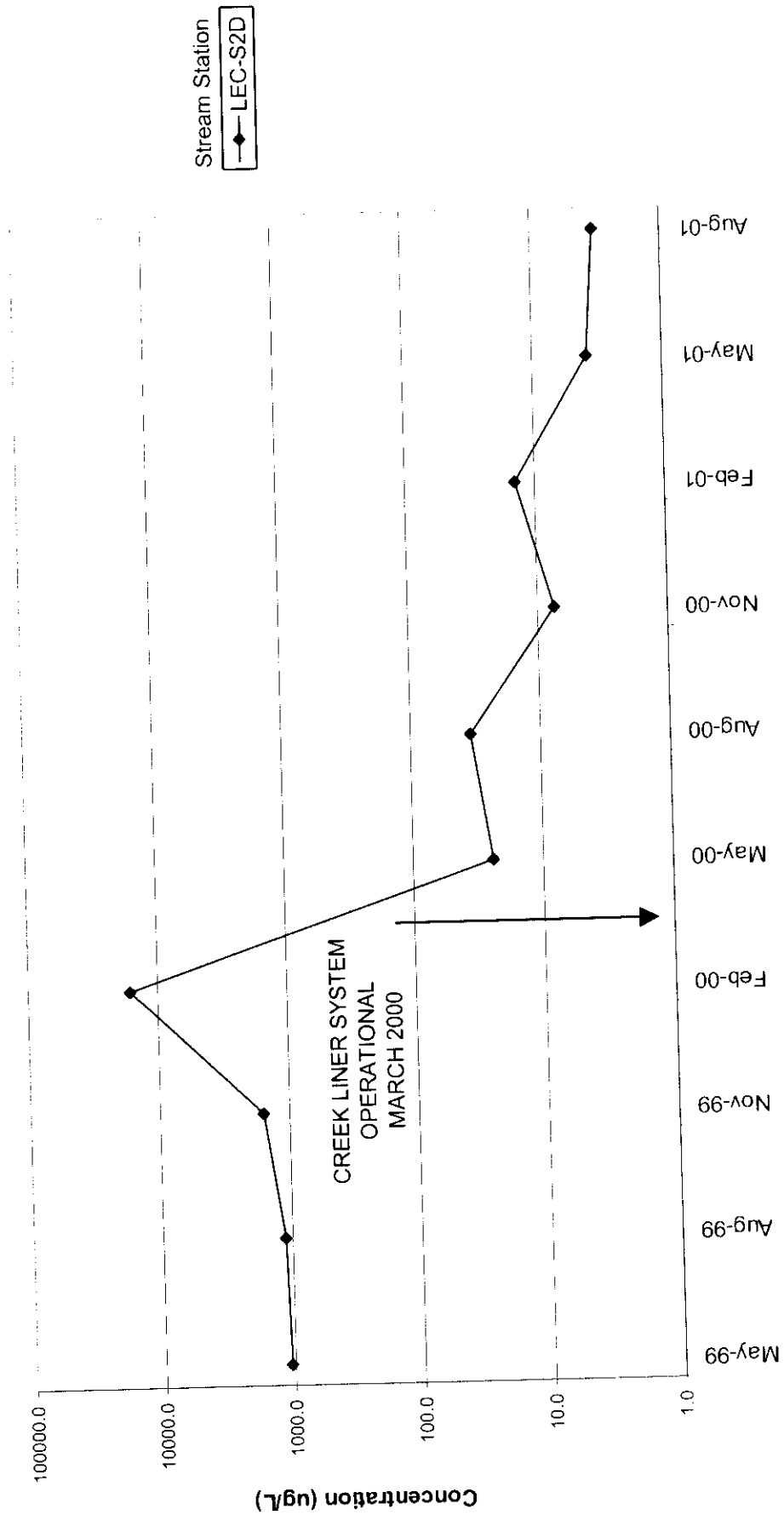


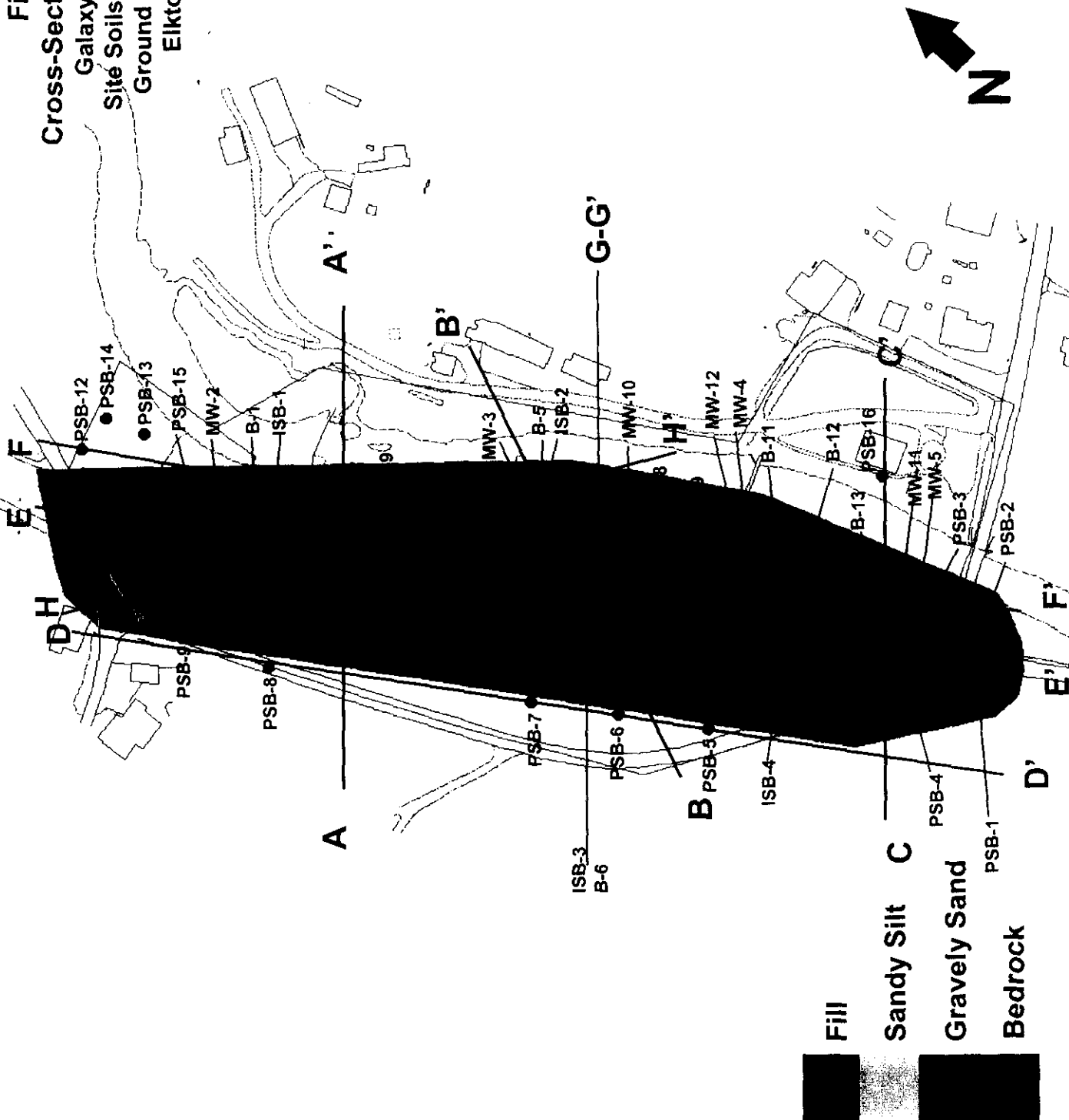
Figure 2-2b

Little Elk Creek Surface Water Total VOC Concentrations  
Galaxy/Spectron Site  
Elkton, Maryland



AR302999

**Figure 4-5**  
**Cross-Section Location Map**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland



**Figure 4-5a**  
**Cross-Section A-A'**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland

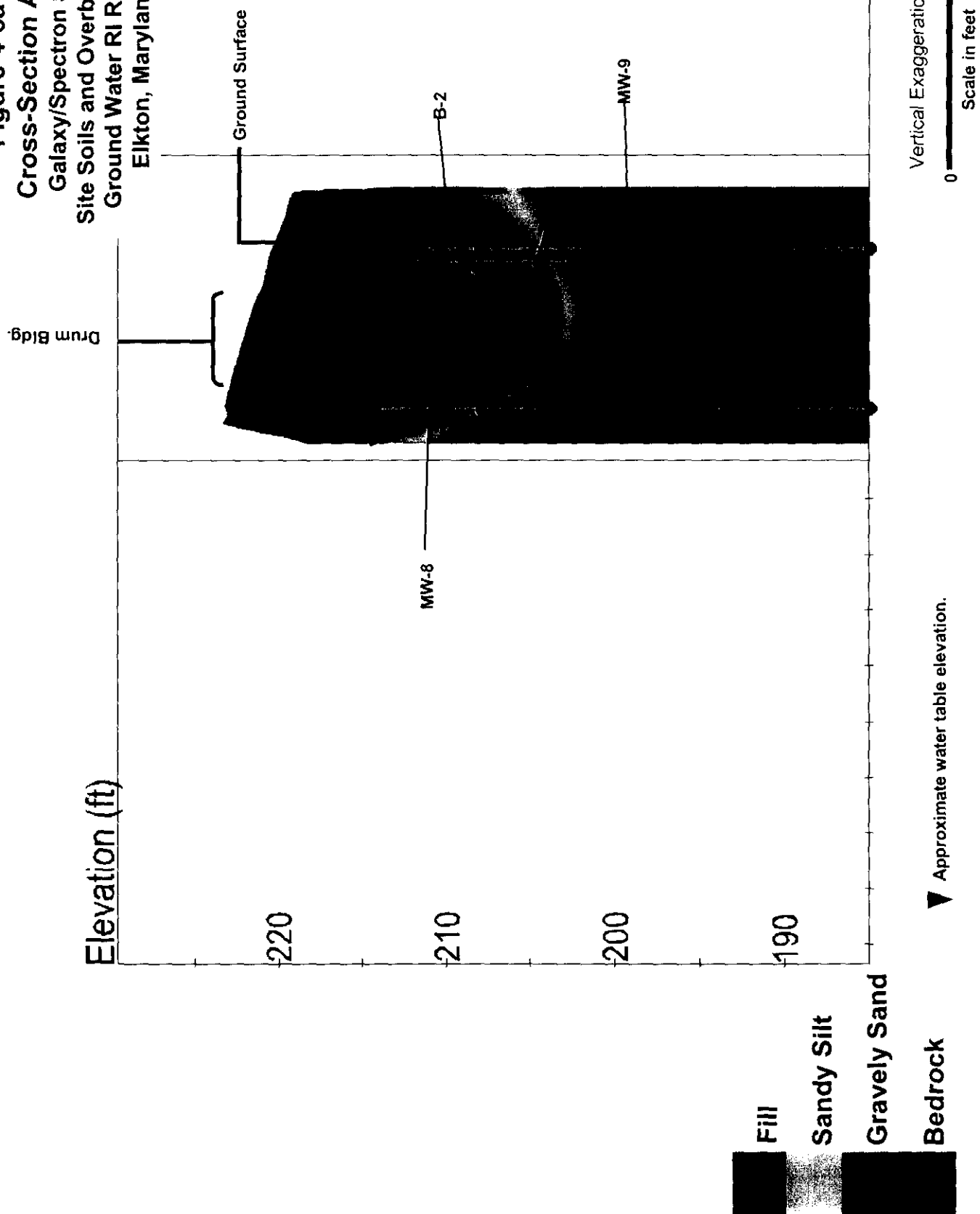


Figure 4-5b

Cross-Section B-B'

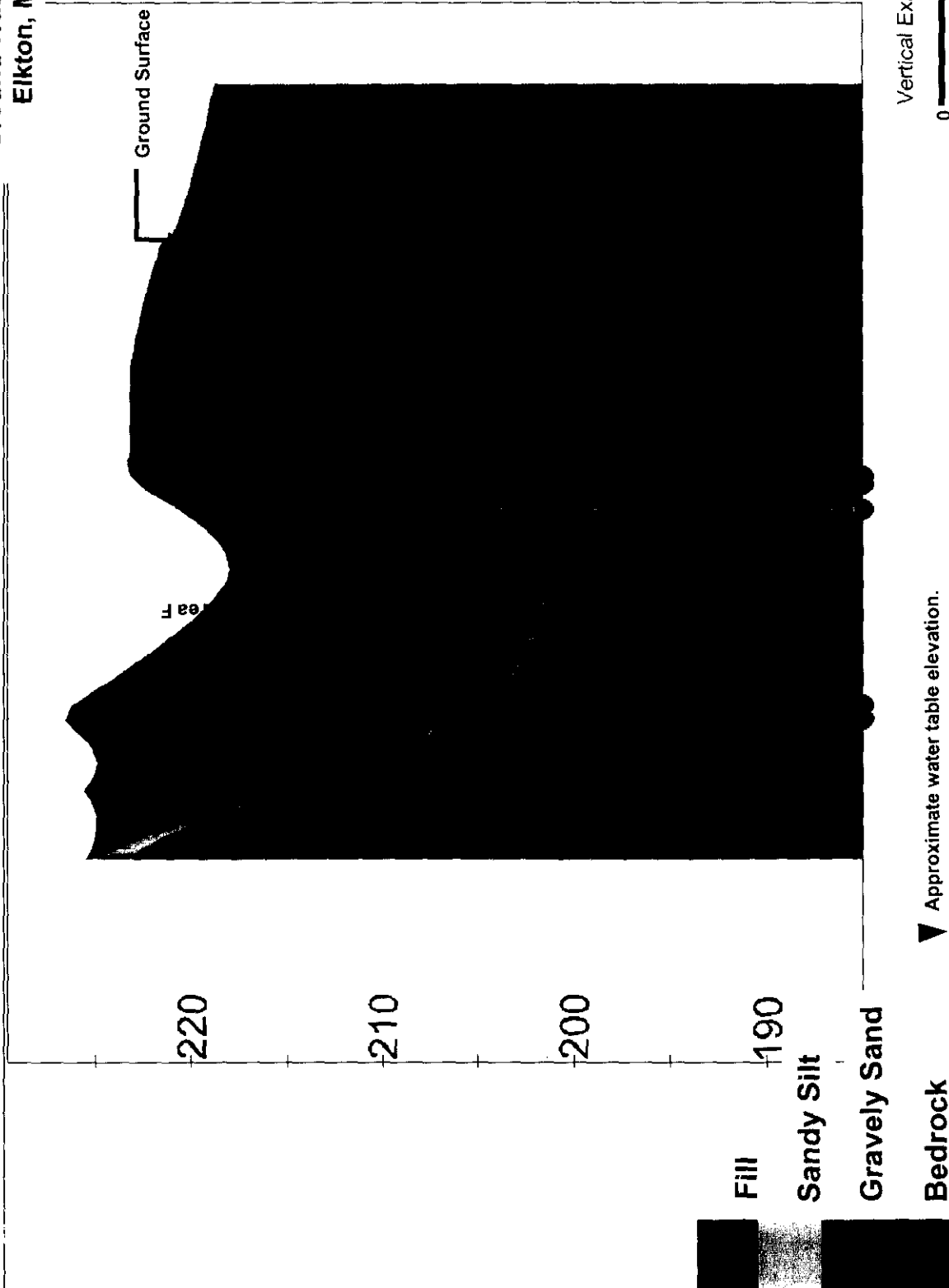
Galaxy/Spectron Site

Site Soils and Overburden

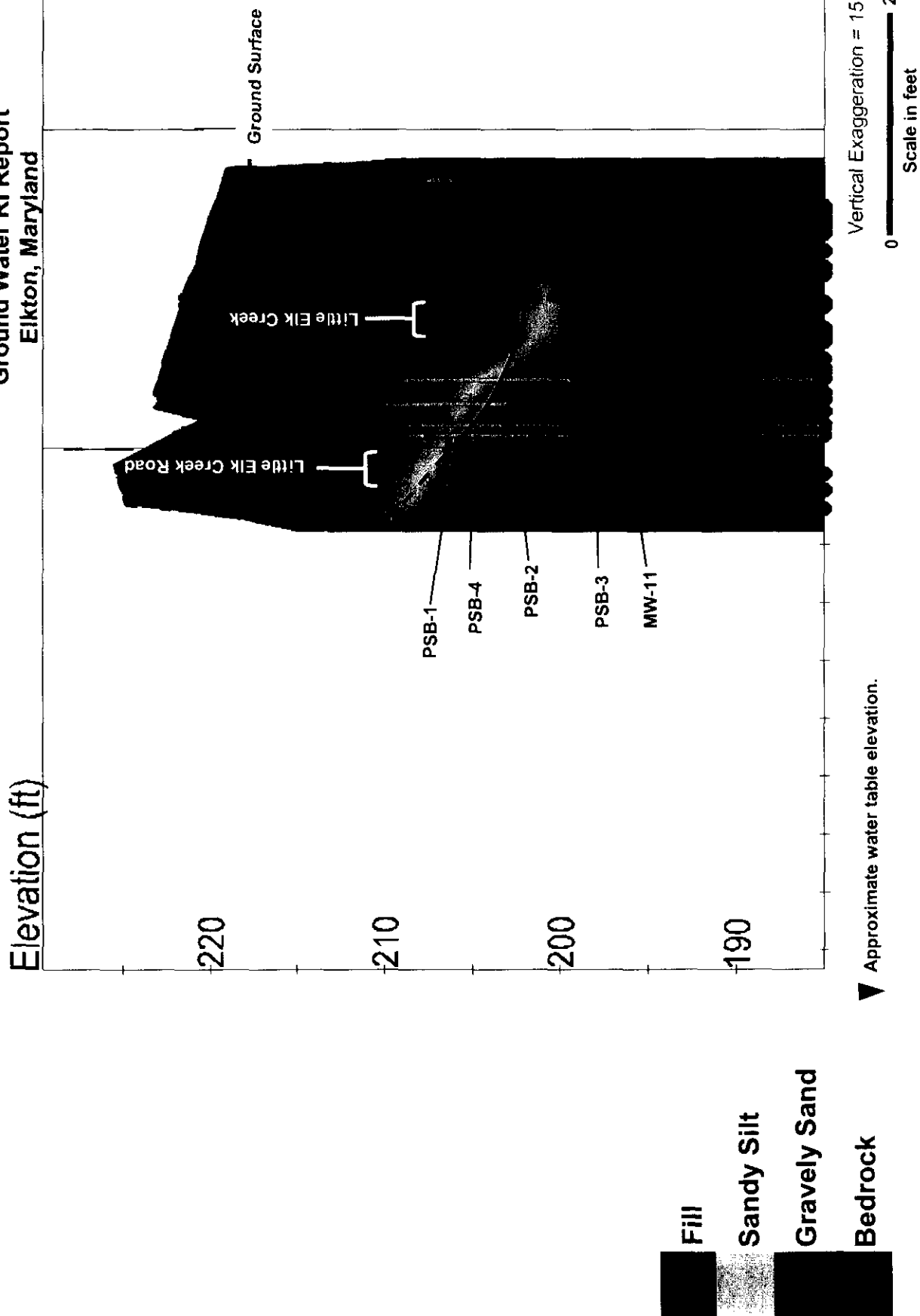
Ground Water RI Report

Elkton, Maryland

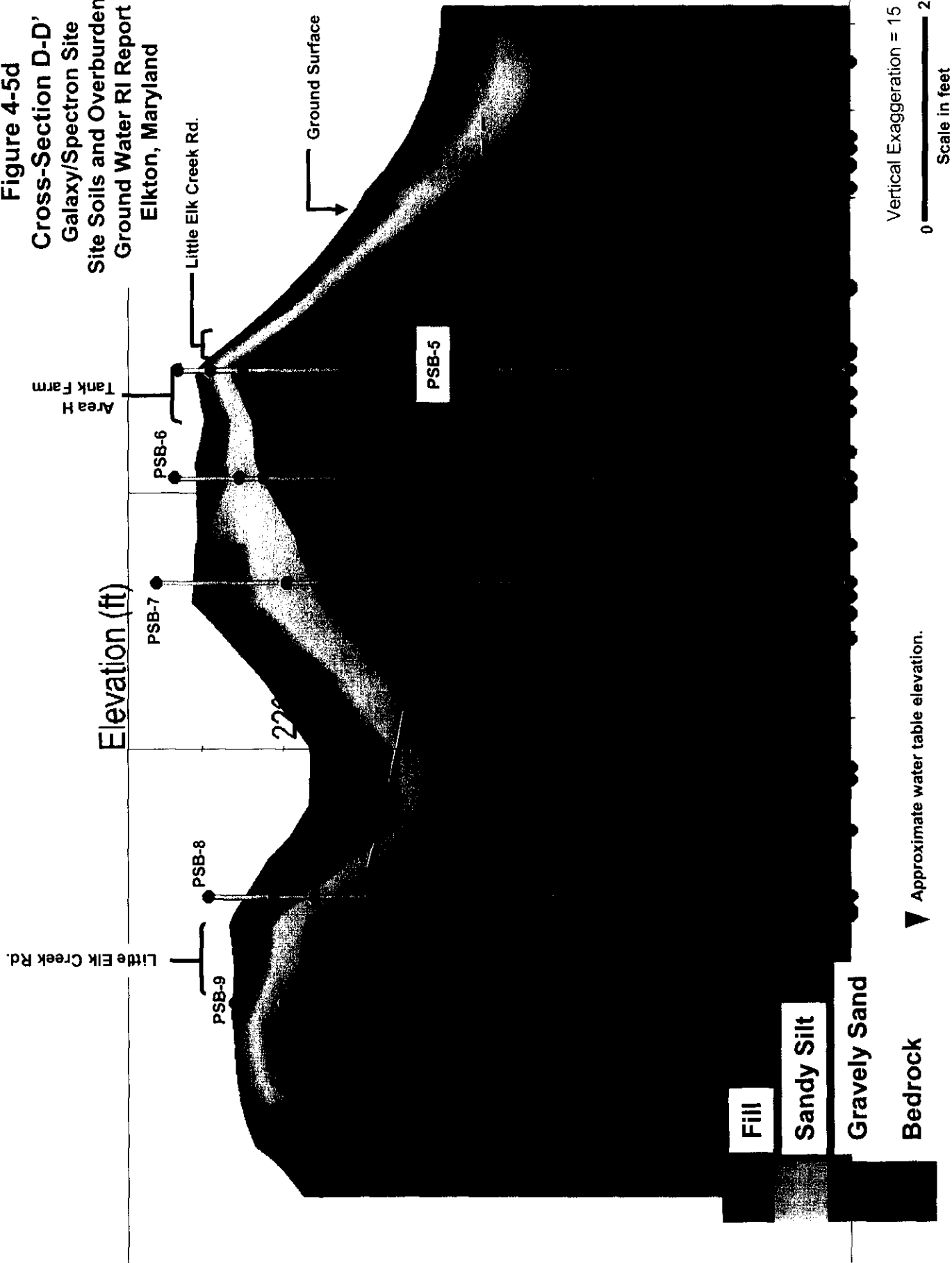
Elevation (ft)



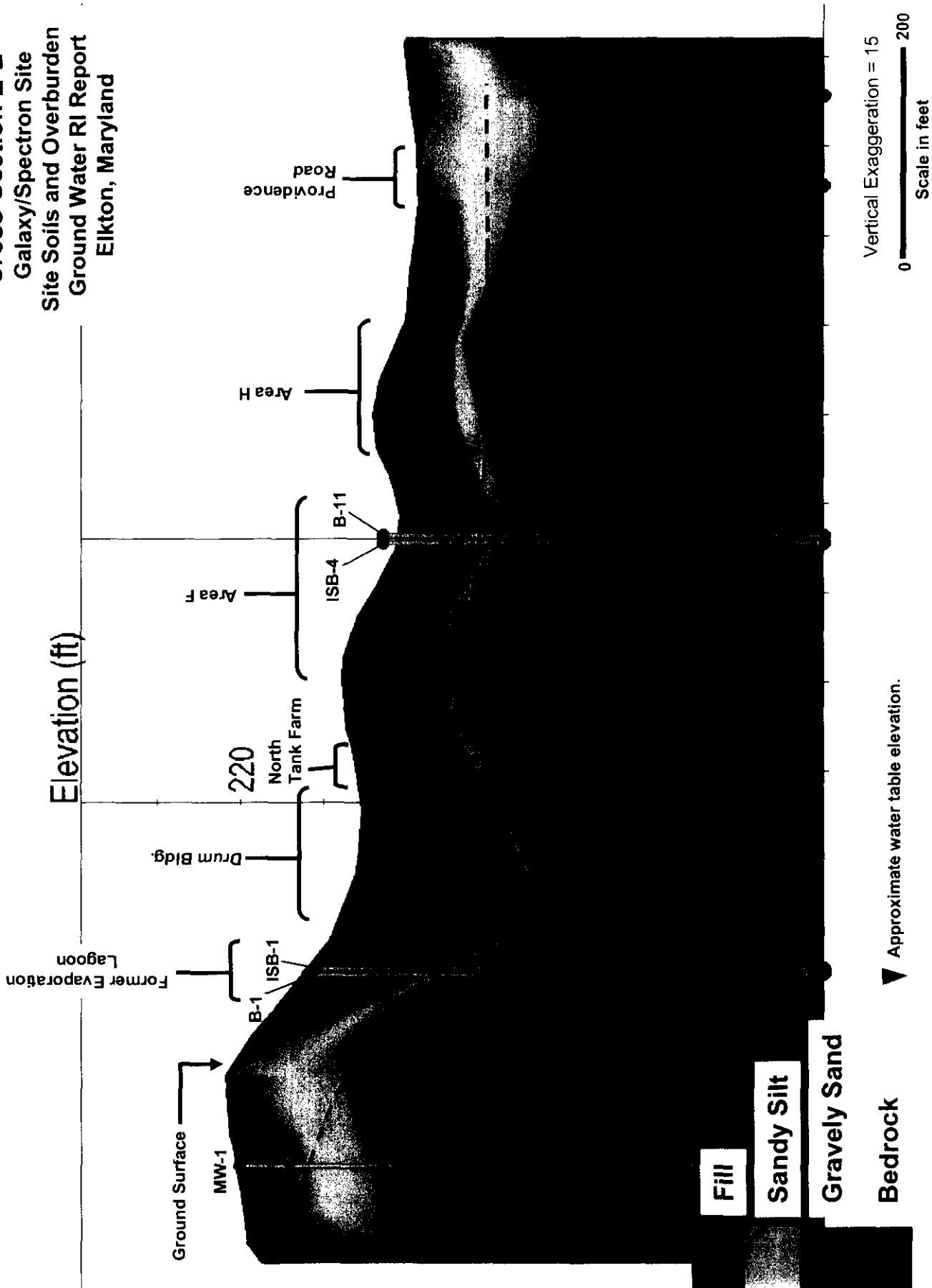
**Figure 4-5c**  
**Cross Section C-C'**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland



**Figure 4-5d**  
**Cross-Section D-D'**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland

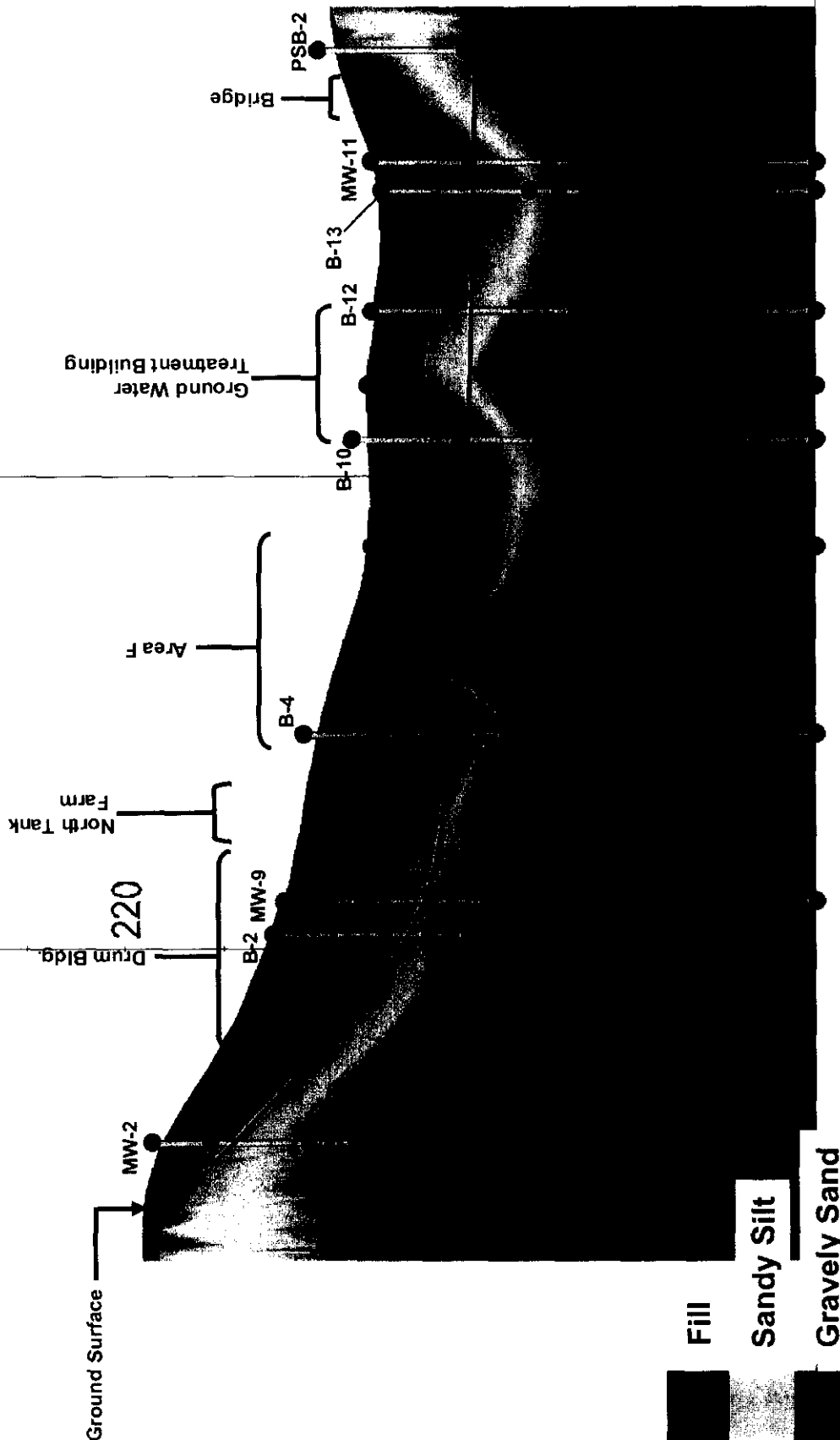


**Figure 4-5e**  
**Cross-Section E-E'**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland



**Figure 4-5f**  
**Cross-Section F-F'**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland

Elevation (ft)



Vertical Exaggeration = 15  
 0 200  
 Scale in feet

▼ Approximate water table elevation.

Fill  
 Sandy Silt  
 Gravely Sand  
 Bedrock

AR303006

**Figure 4-5g**  
**Cross-Section G-G'**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland

Elevation (ft)

220

210

200

190

Fill

Sandy Silt

Gravelly Sand

Bedrock

ISB-2

B-5

B-7

Ground Surface

▼ Approximate water table elevation.

Vertical Exaggeration = 15

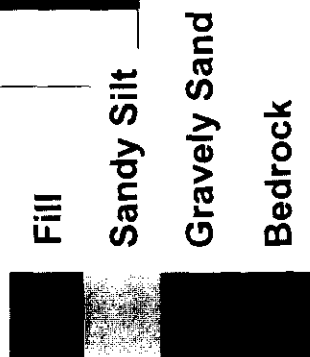
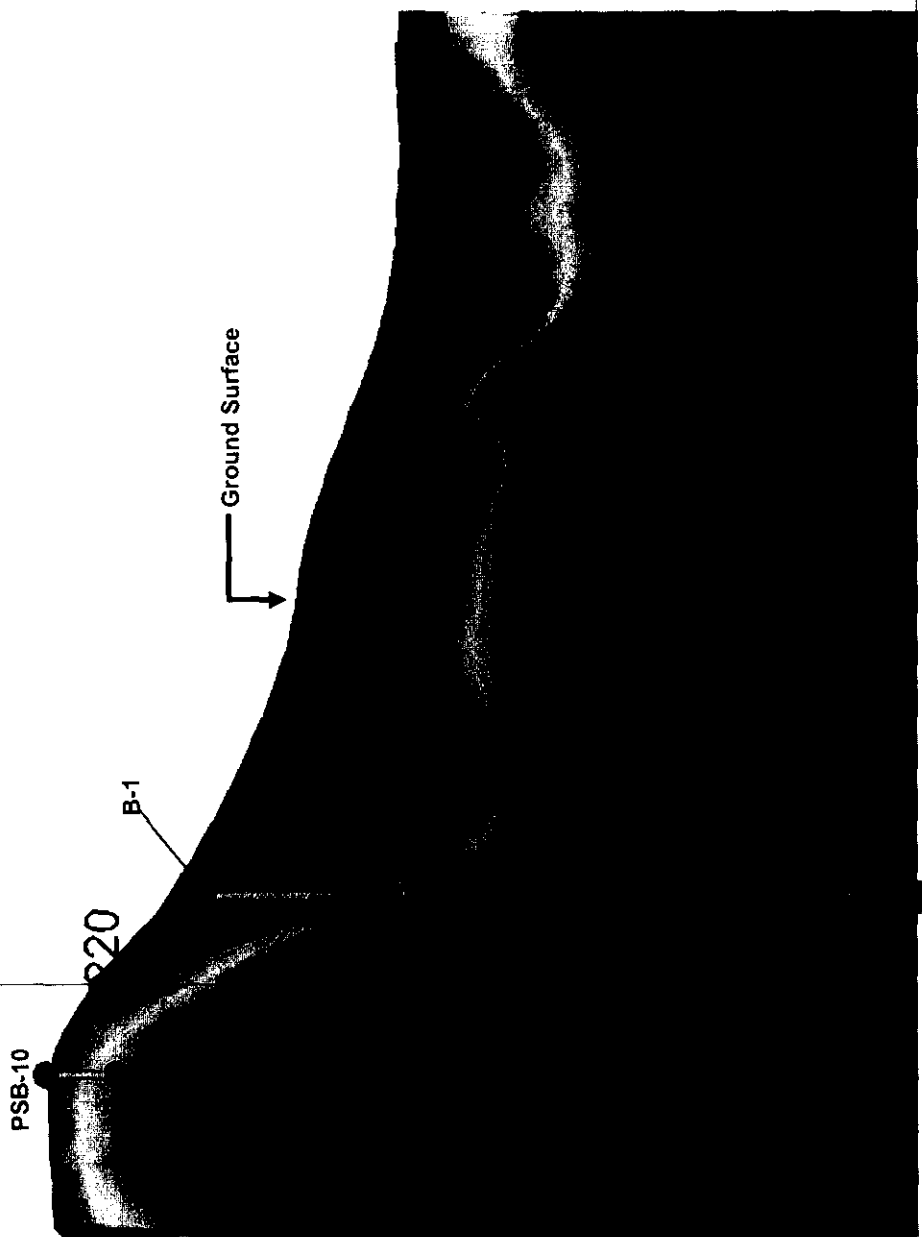
0 200  
 Scale in feet

AR303007

94007 15 01/2/15/01-JW-8

**Figure 4-5h**  
**Cross-Section H-H'**  
 Galaxy/Spectron Site  
 Site Soils and Overburden  
 Ground Water RI Report  
 Elkton, Maryland

Elevation (ft)



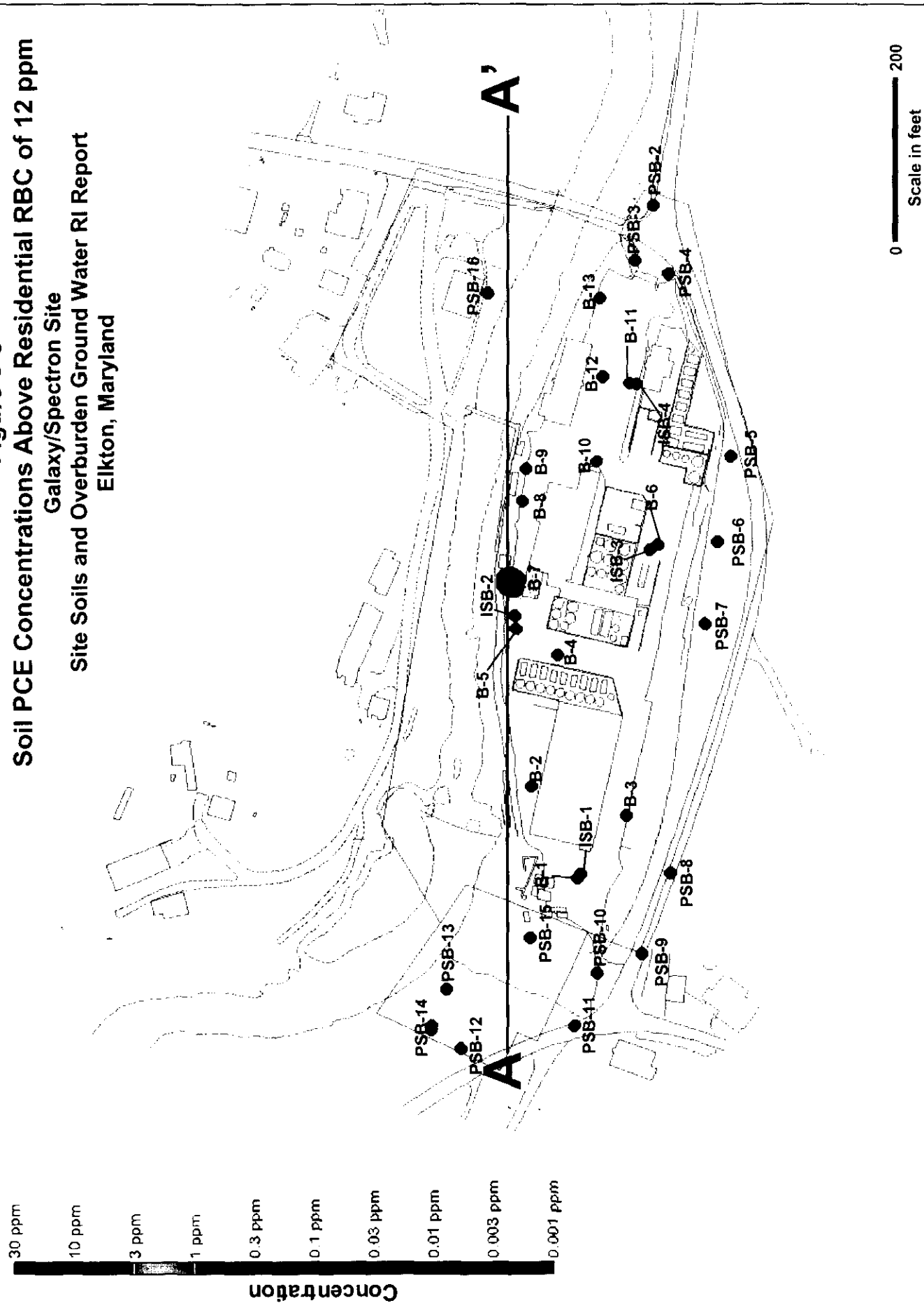
Vertical Exaggeration = 15

0 200

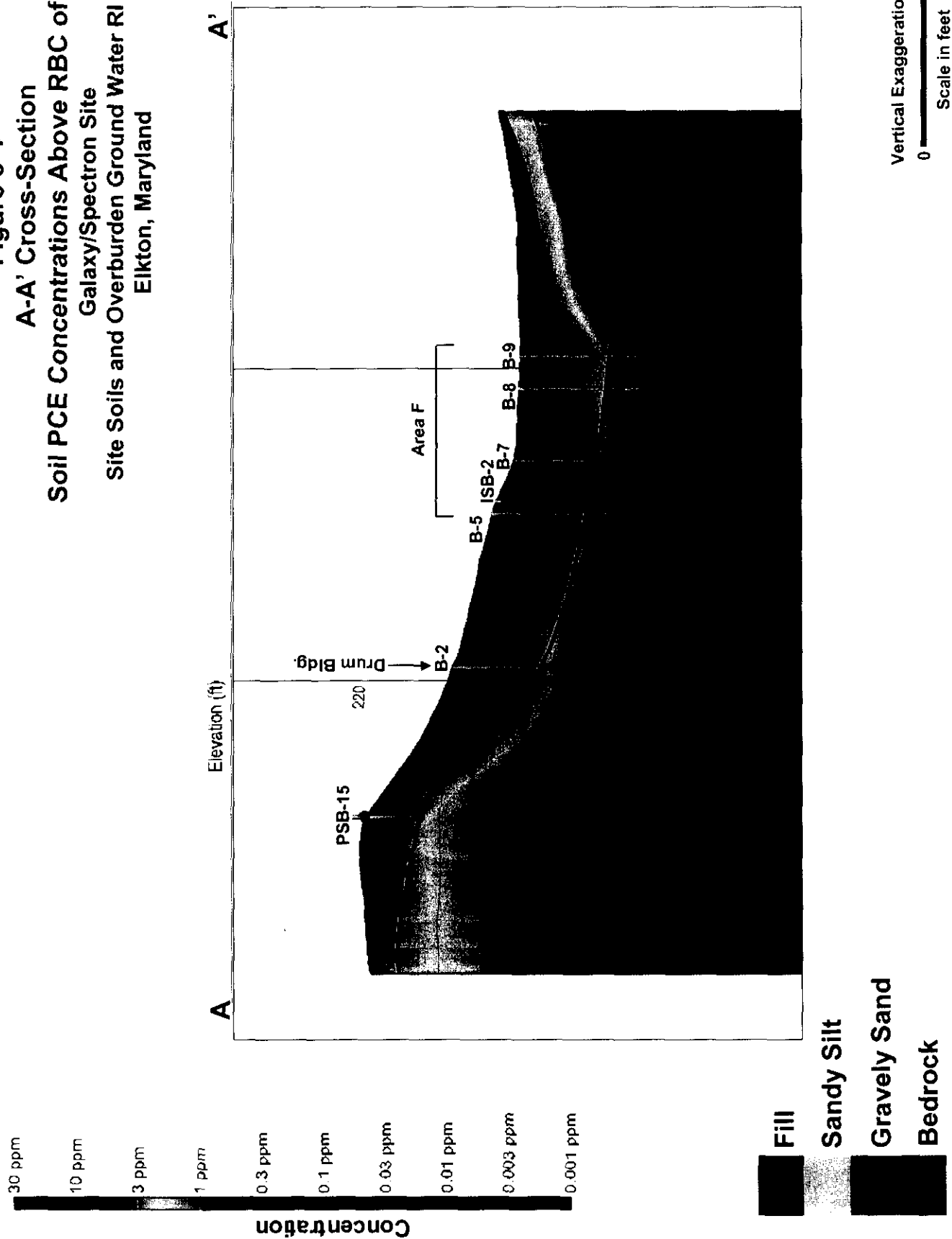
Scale in feet

▼ Approximate water table elevation.

**Figure 5-3**  
**Soil PCE Concentrations Above Residential RBC of 12 ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland

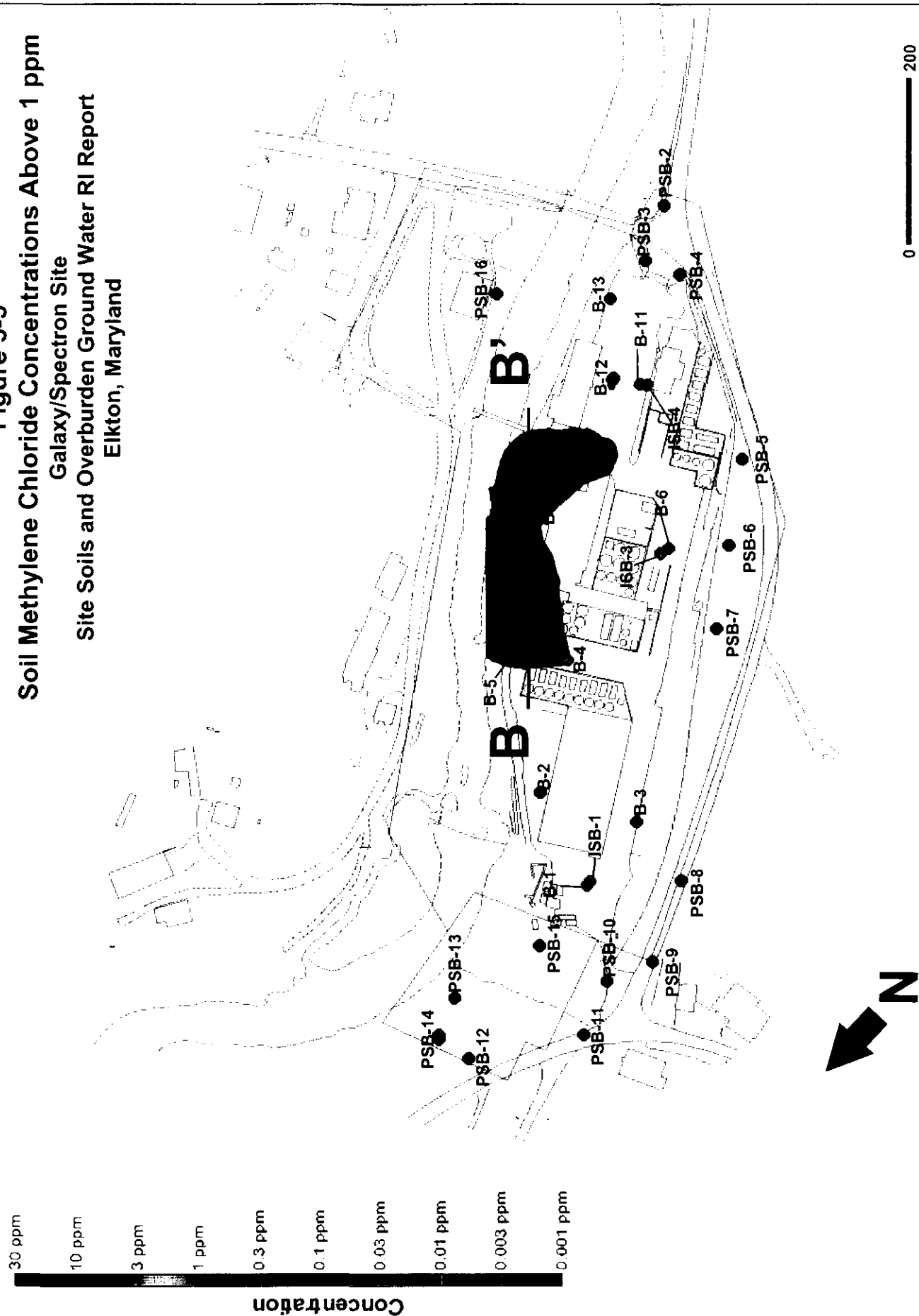


**Figure 5-4**  
**A-A' Cross-Section**  
**Soil PCE Concentrations Above RBC of 12 ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland



AR303010

**Figure 5-5**  
**Soil Methylene Chloride Concentrations Above 1 ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland

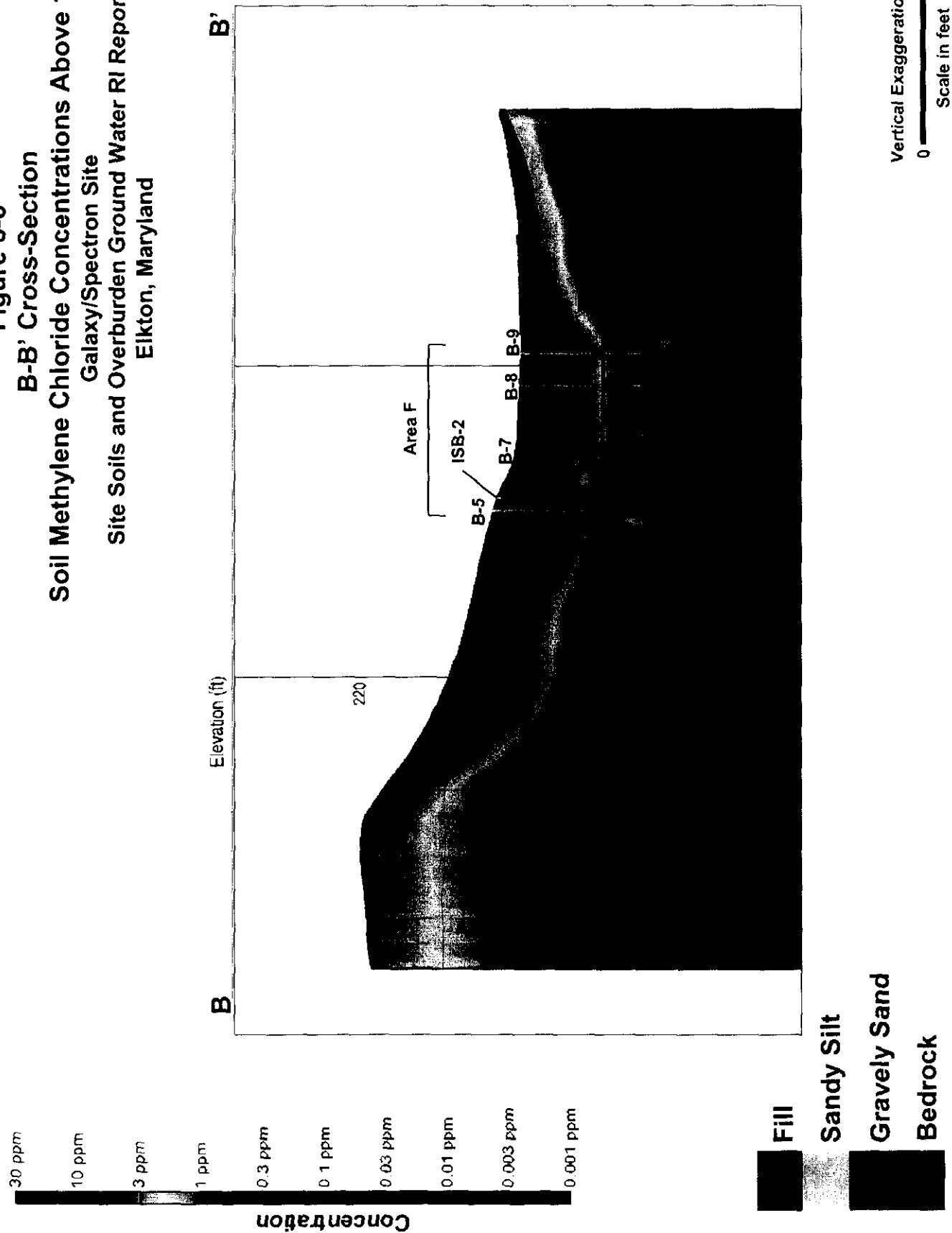


Note: A value of 1 mg/kg was chosen to view the methylene chloride plume because all of the methylene chloride detections were below the residential RBC of 85 mg/kg.

AR303011

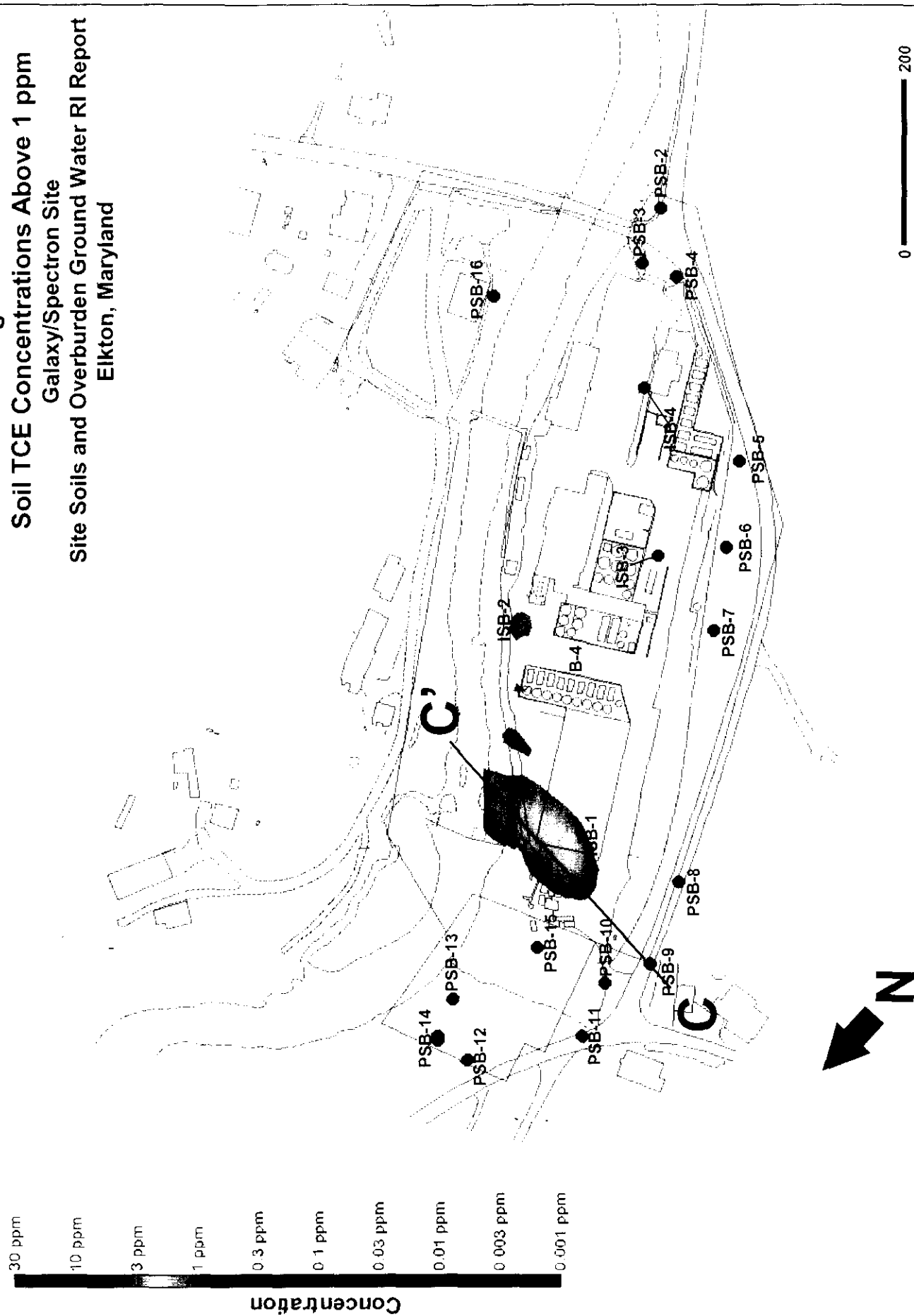
**Figure 5-6**  
**B-B' Cross-Section**

**Soil Methylene Chloride Concentrations Above 1ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland



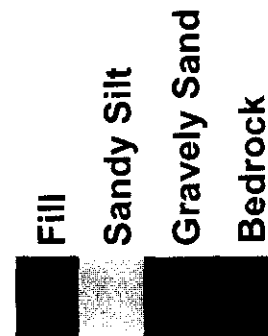
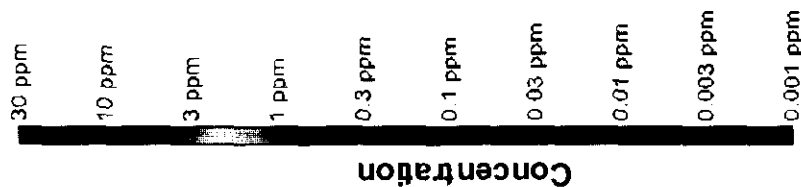
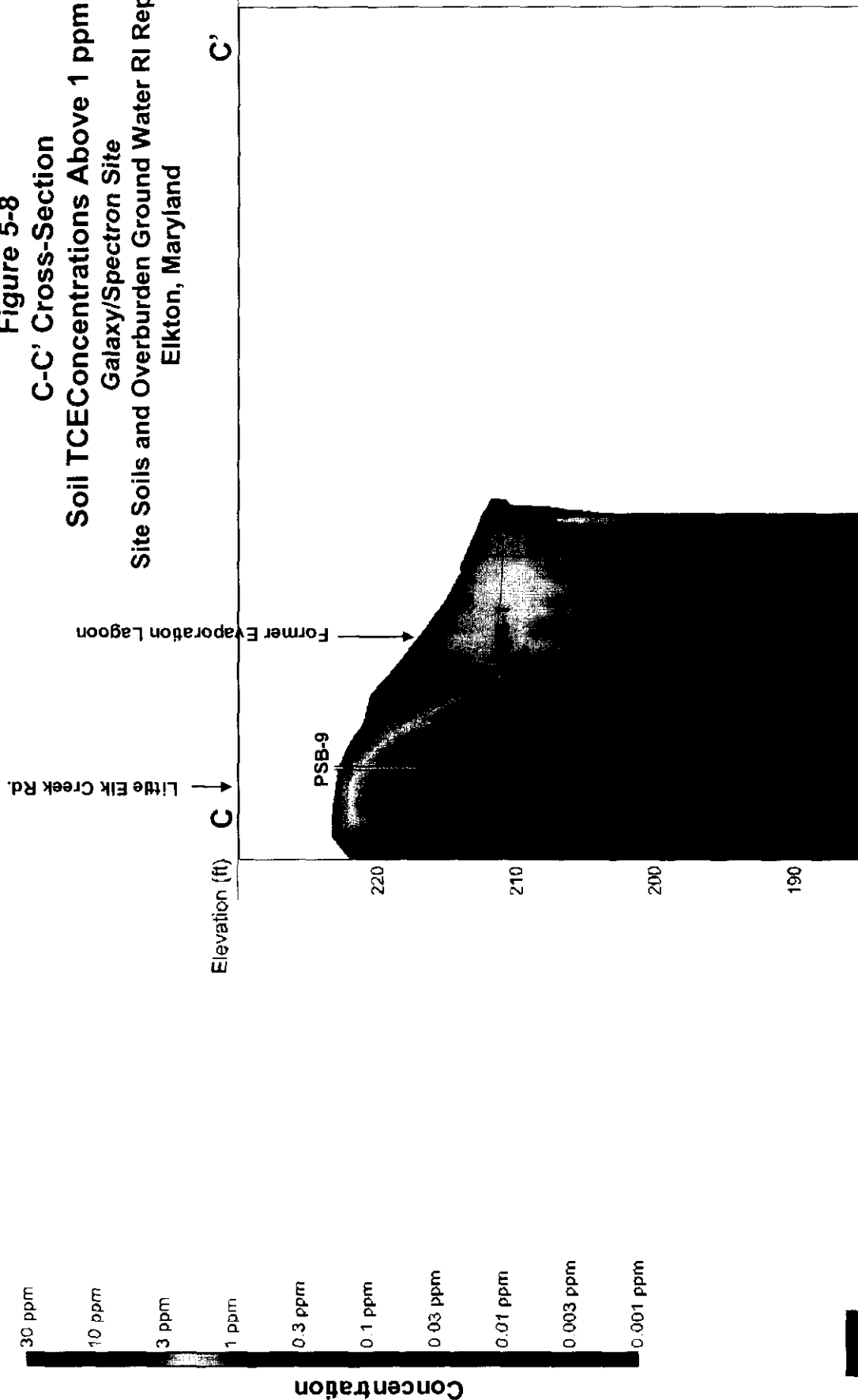
AR303012

**Figure 5-7**  
**Soil TCE Concentrations Above 1 ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland



Note: A value of 1 mg/kg was chosen to view the TCE plume because all of the TCE detections were below the residential RBC of 58 mg/kg.

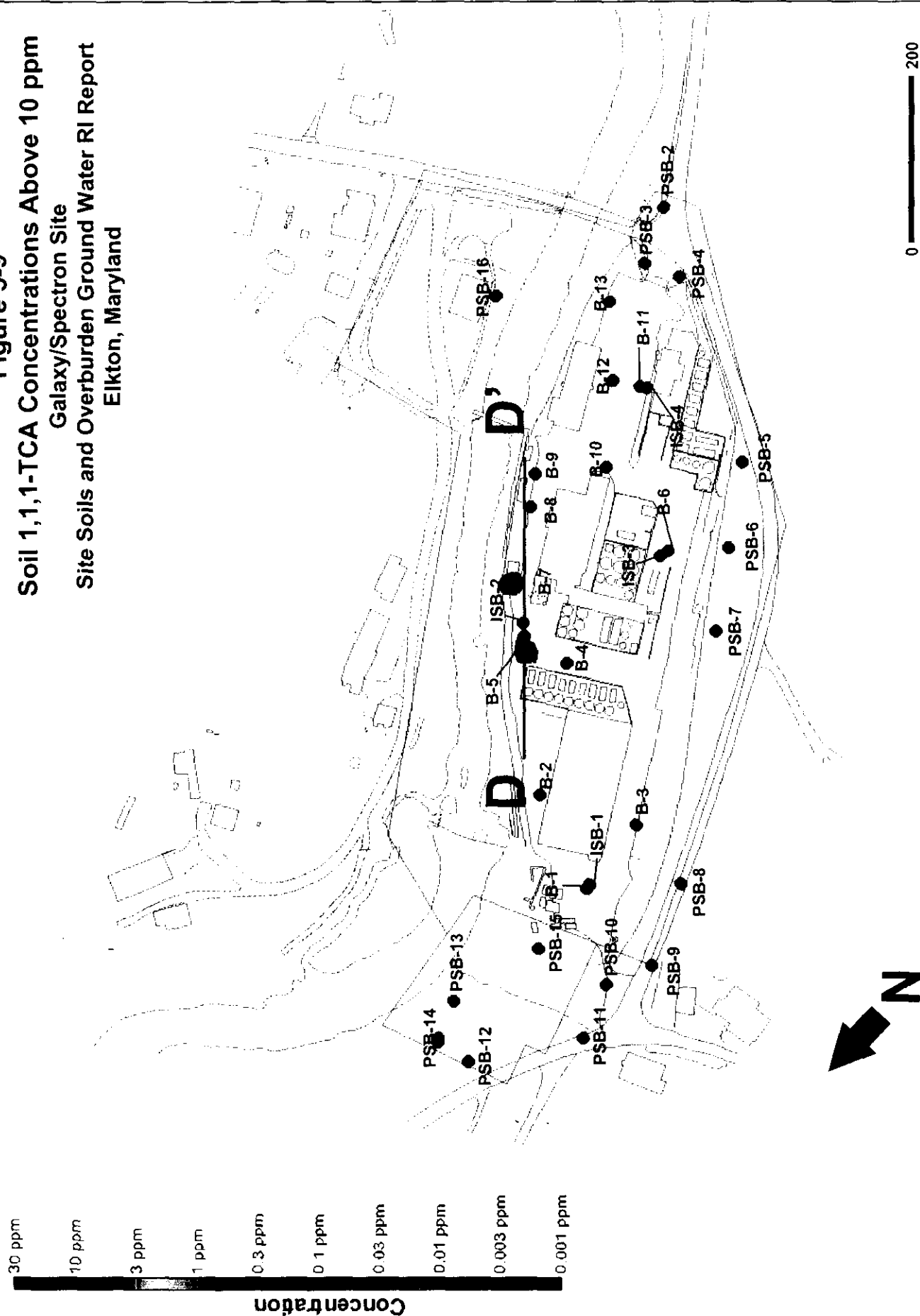
**Figure 5-8**  
**C-C' Cross-Section**  
**Soil TCE Concentrations Above 1 ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland



Vertical Exaggeration = 15  
 0 ————— 200  
 Scale in feet

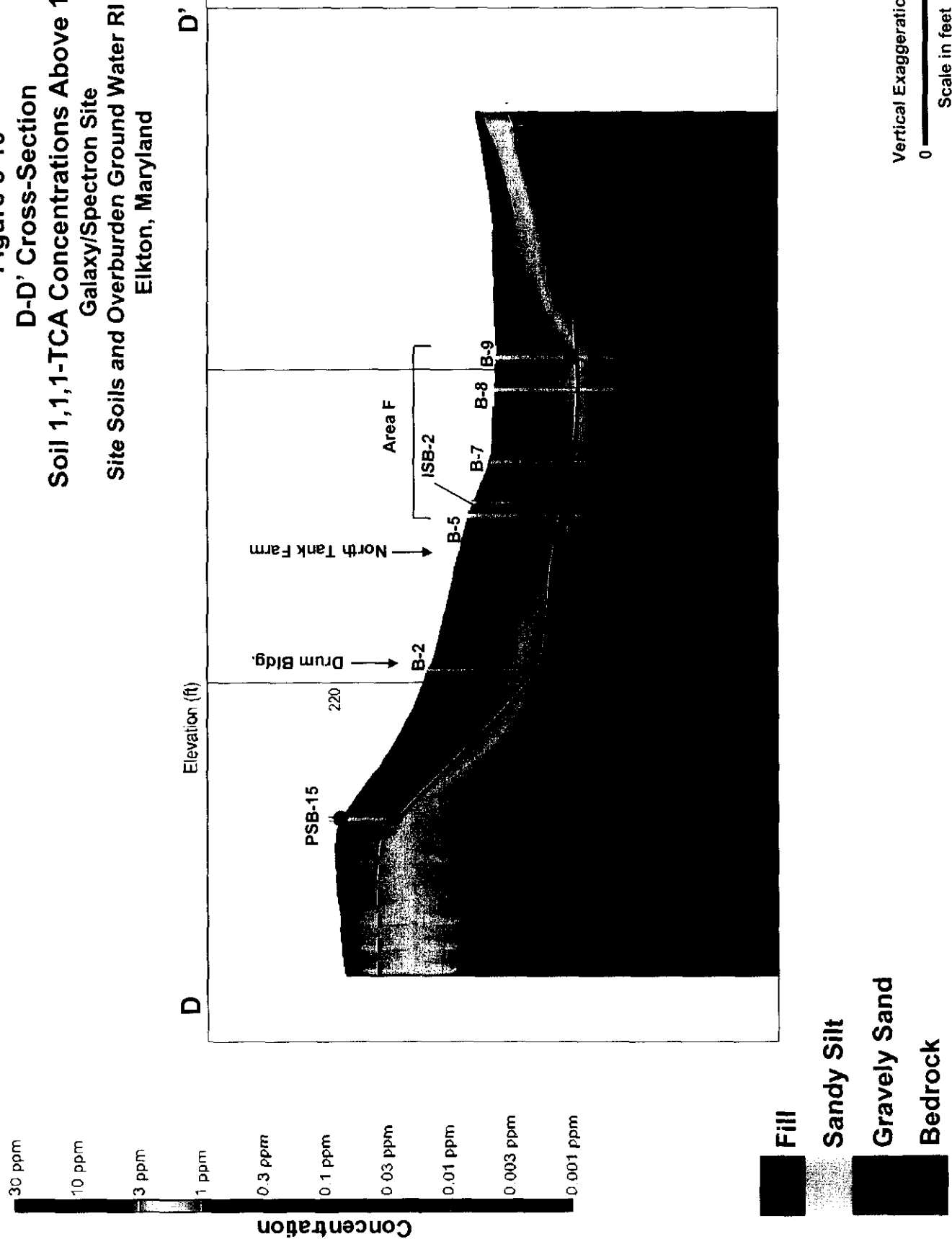
**Figure 5-9**

**Soil 1,1,1-TCA Concentrations Above 10 ppm**  
**Galaxy/Spectron Site**  
**Site Soils and Overburden Ground Water RI Report**  
**Elkton, Maryland**

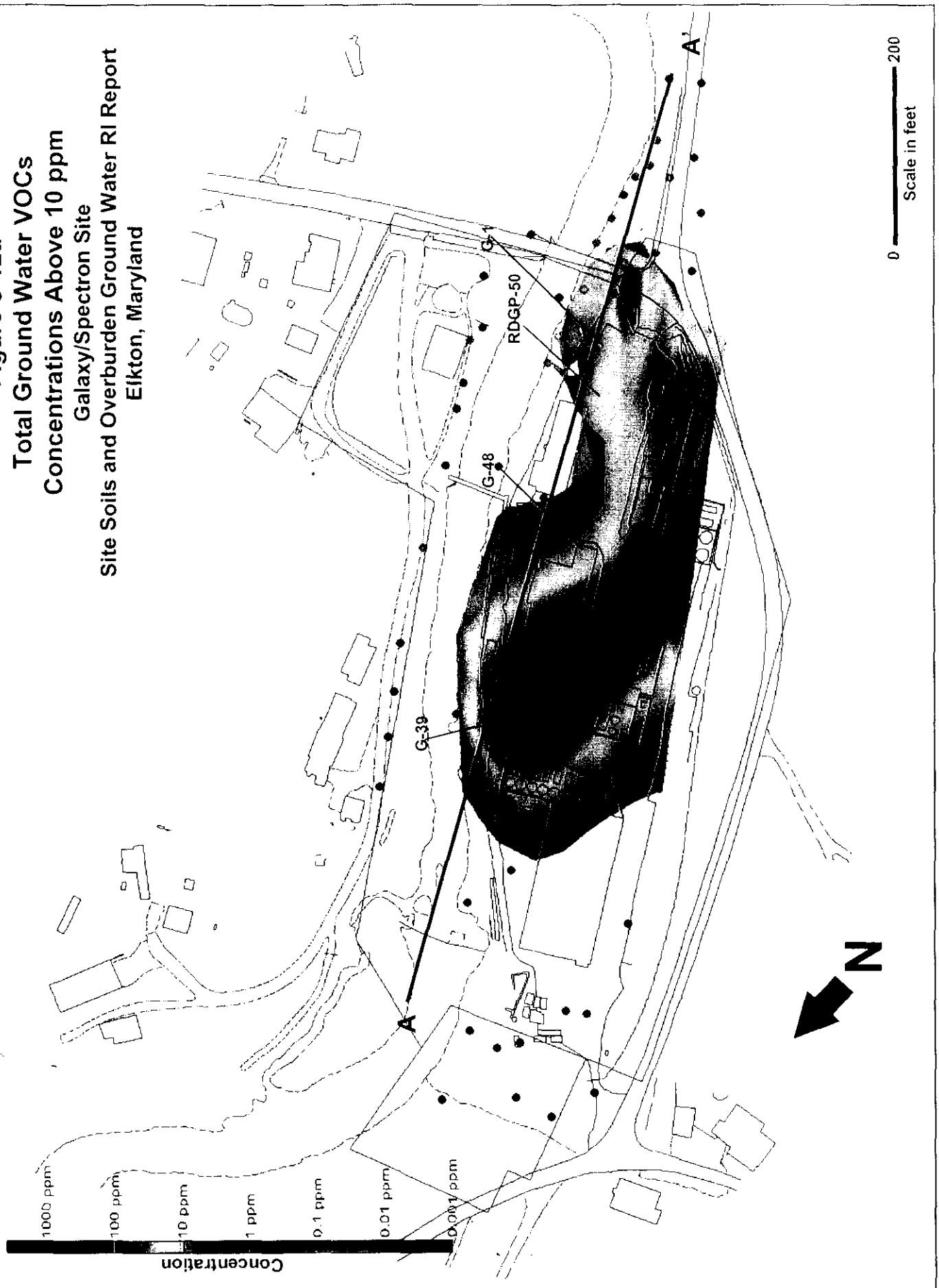


Note: A value of 10 mg/kg was chosen to view the 1,1,1-TCA plume because all of the 1,1,1-TCA detections were below the residential RBC of 22,000 mg/kg.

**Figure 5-10**  
**D-D' Cross-Section**  
**Soil 1,1,1-TCA Concentrations Above 10 ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland



**Figure 5-12a**  
**Total Ground Water VOCs**  
**Concentrations Above 10 ppm**  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland



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Figure 5-12b  
 Total Ground Water VOCs  
 Concentrations Above 10 ppm  
 A-A' Cross-Section  
 Galaxy/Spectron Site  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland

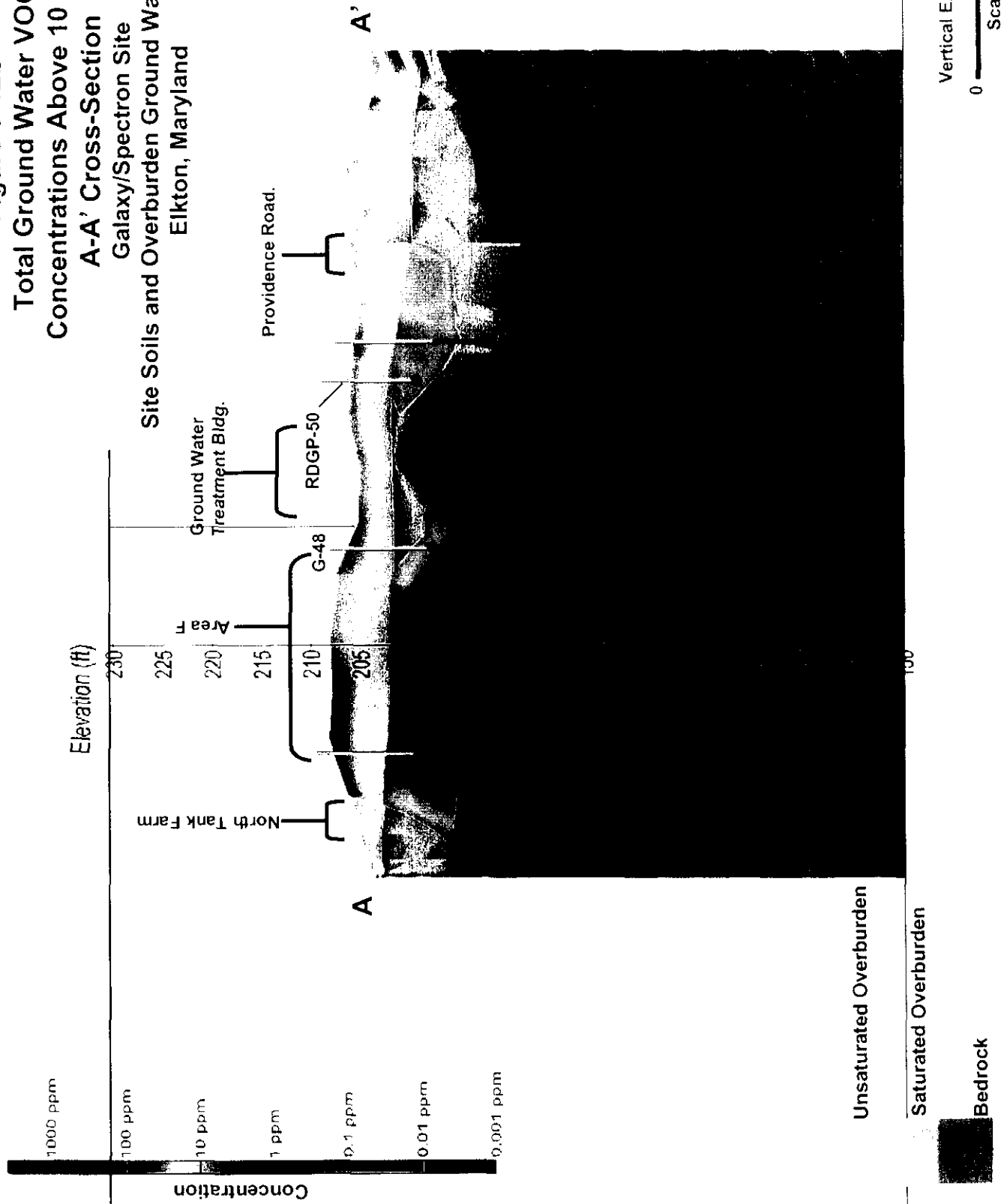
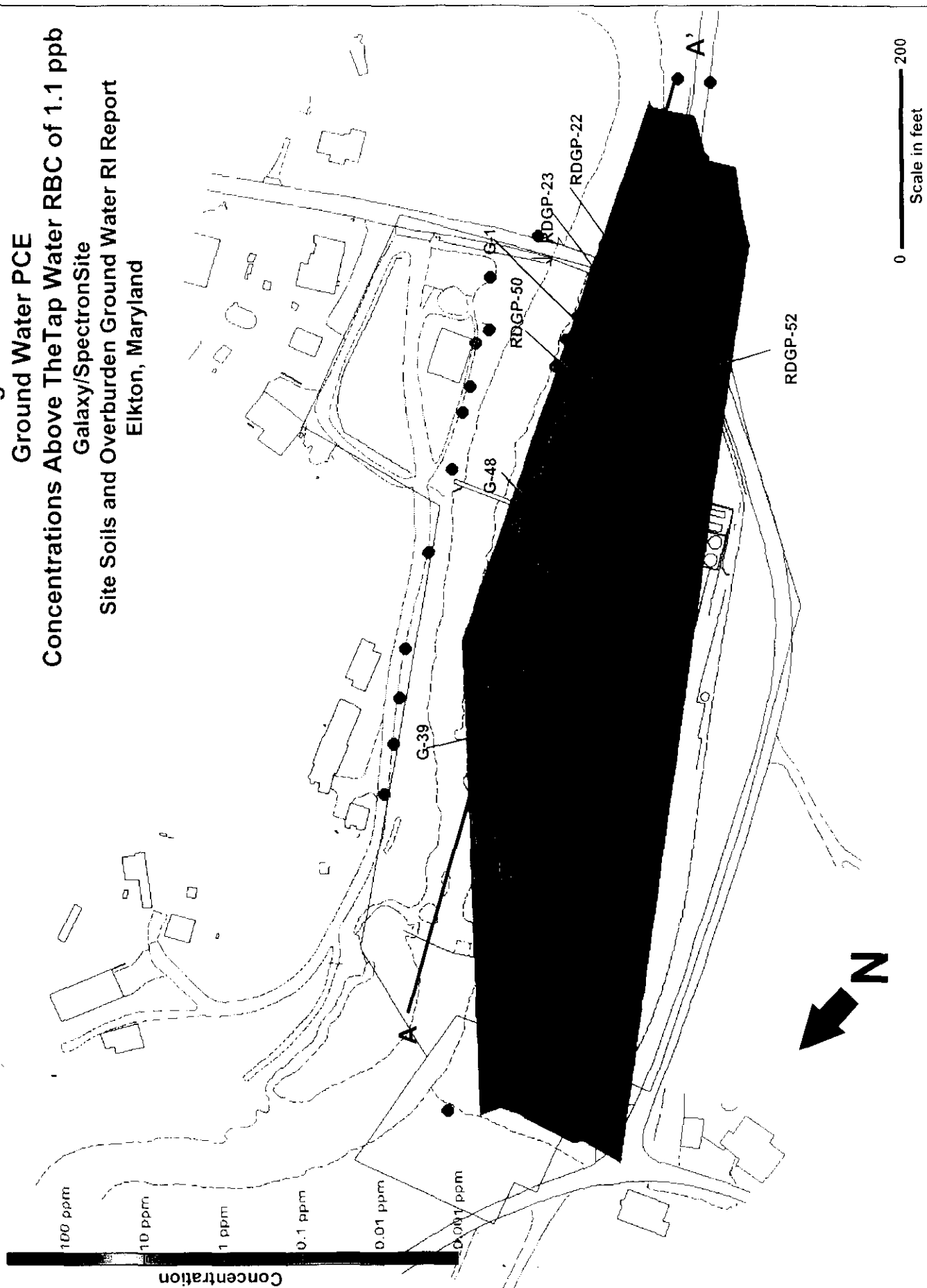
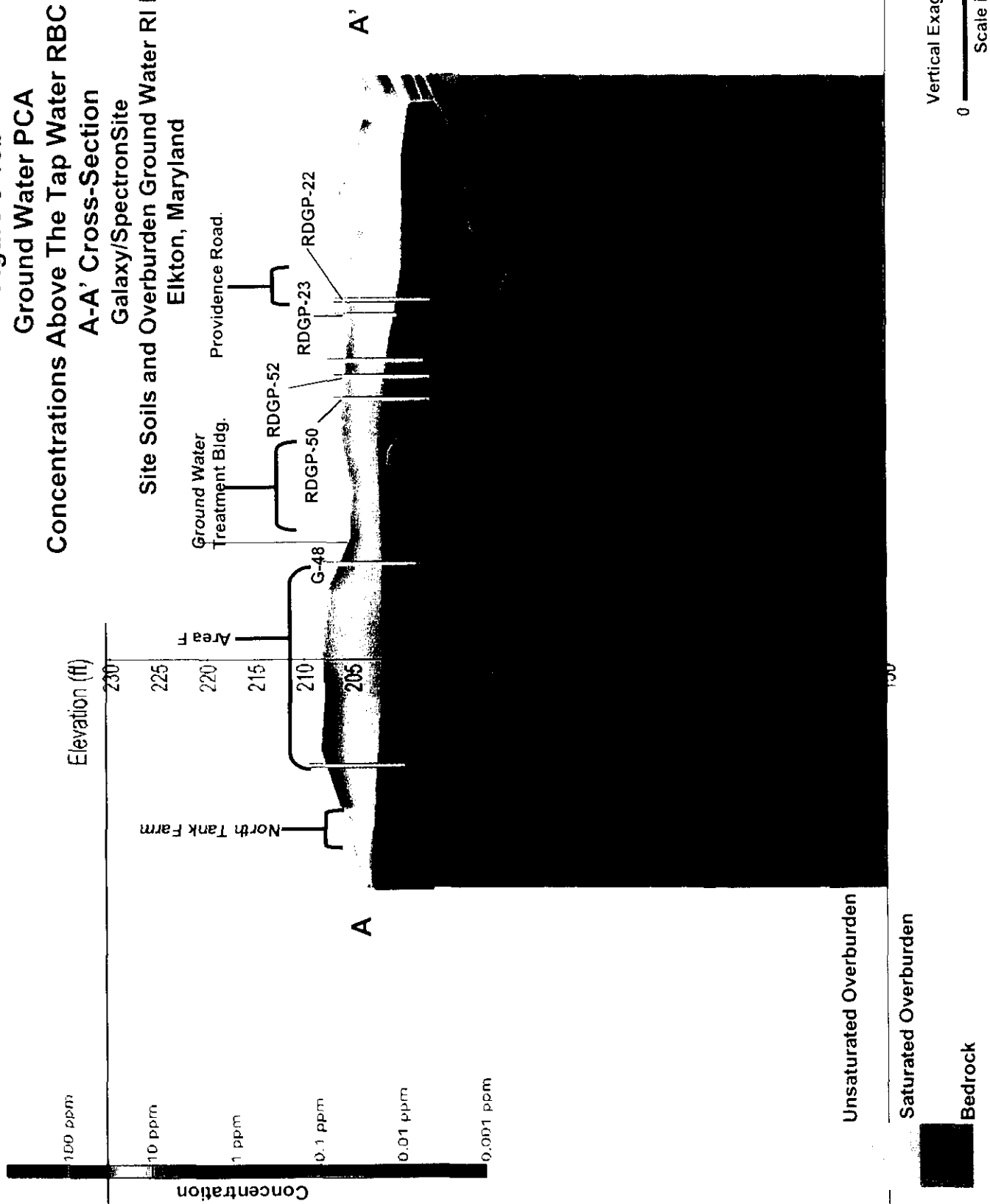


Figure 5-18a  
Ground Water PCE  
Concentrations Above The Tap Water RBC of 1.1 ppb  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

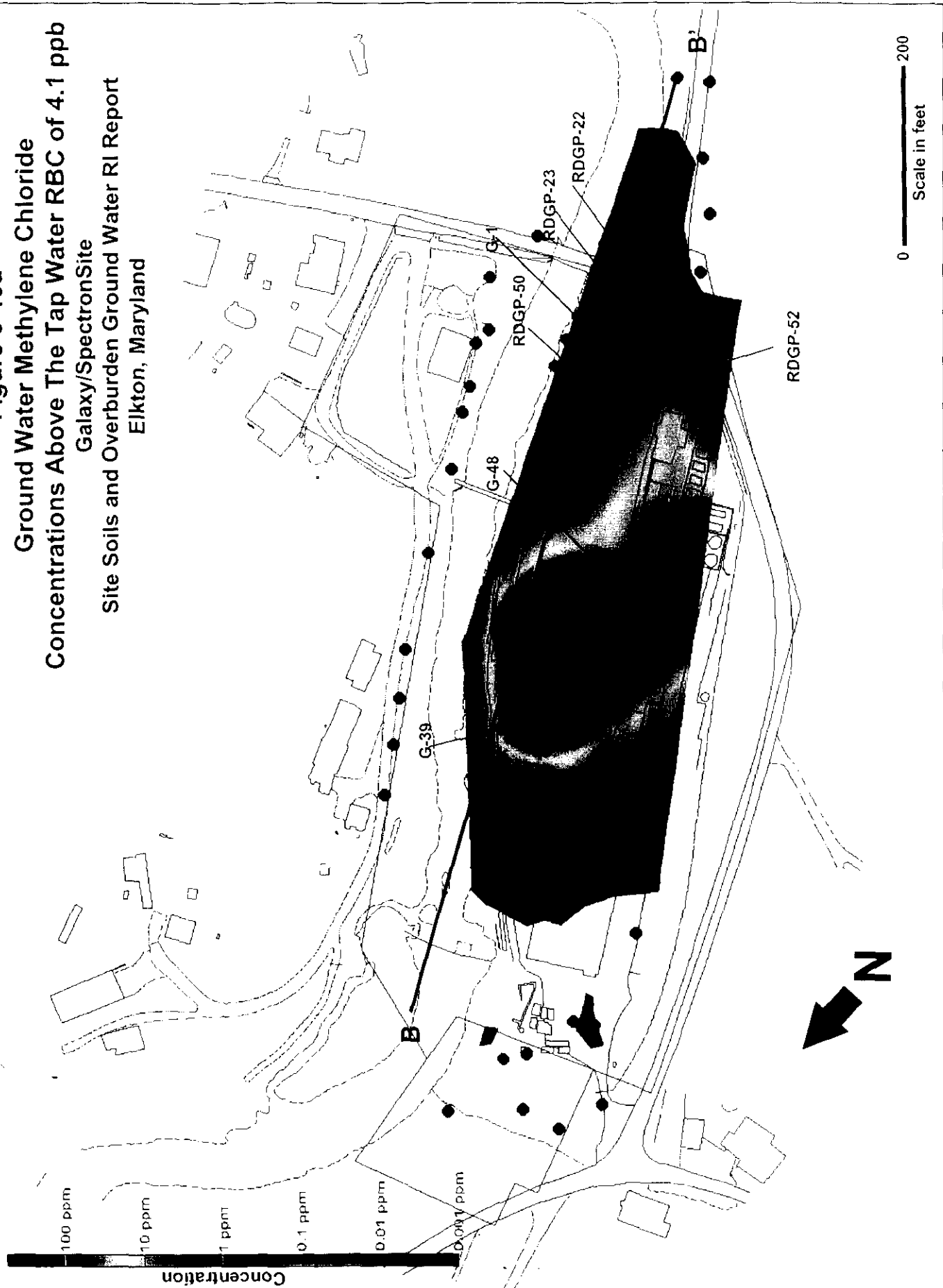


**Figure 5-18b**  
**Ground Water PCA**  
**Concentrations Above The Tap Water RBC of 1.1 ppb**  
**A-A' Cross-Section**  
**Galaxy/Spectron Site**  
**Site Soils and Overburden Ground Water RI Report**  
**Elkton, Maryland**



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**Figure 5-19a**  
**Ground Water Methylene Chloride**  
**Concentrations Above The Tap Water RBC of 4.1 ppb**  
 Galaxy/SpectronSite  
 Site Soils and Overburden Ground Water RI Report  
 Elkton, Maryland



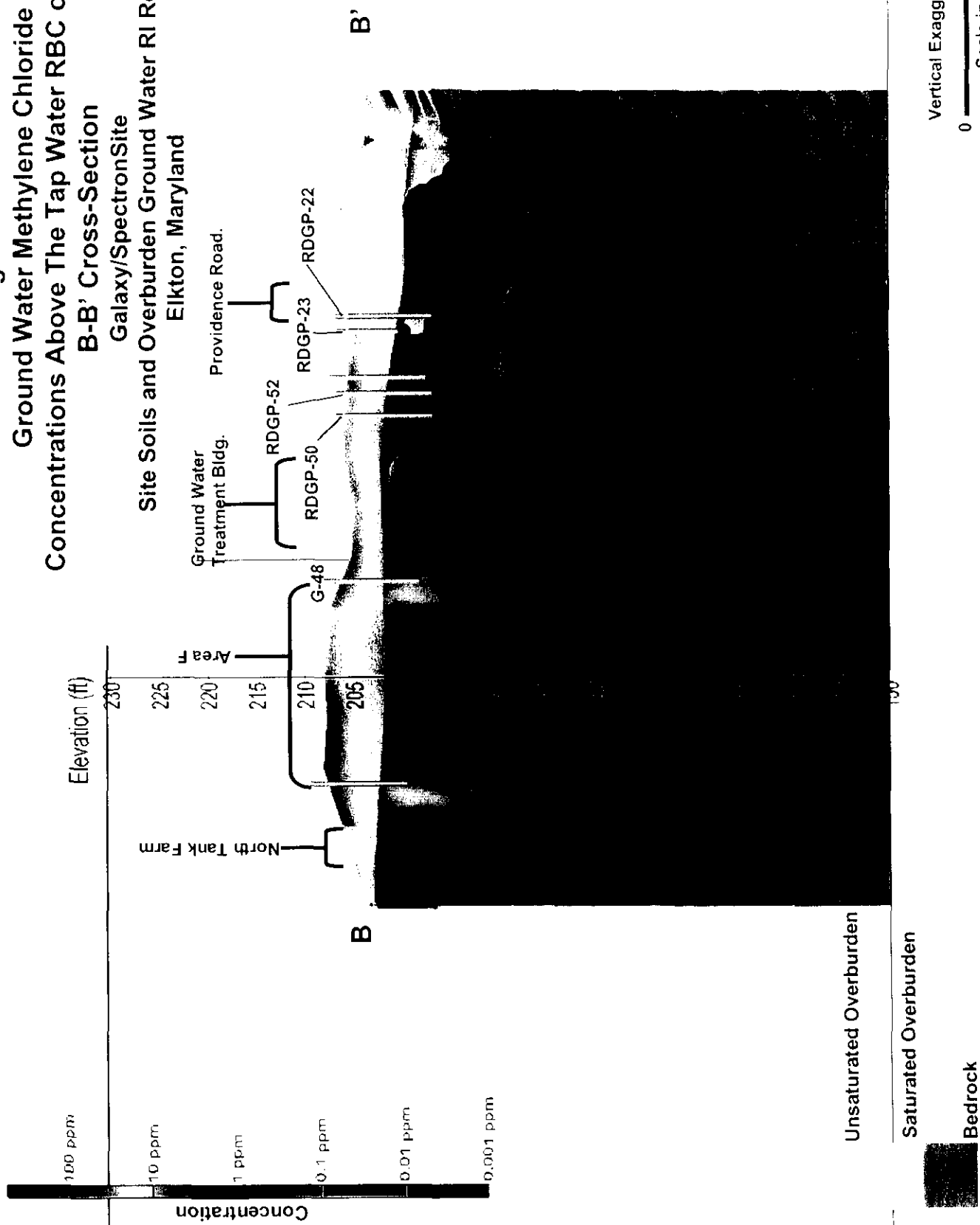
AR303021

Figure 5-19b

# Ground Water Methylene Chloride

Concentrations Above The Tap Water RBC of 4.1 ppb  
B-B' Cross-Section

Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland



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Figure 5-20a

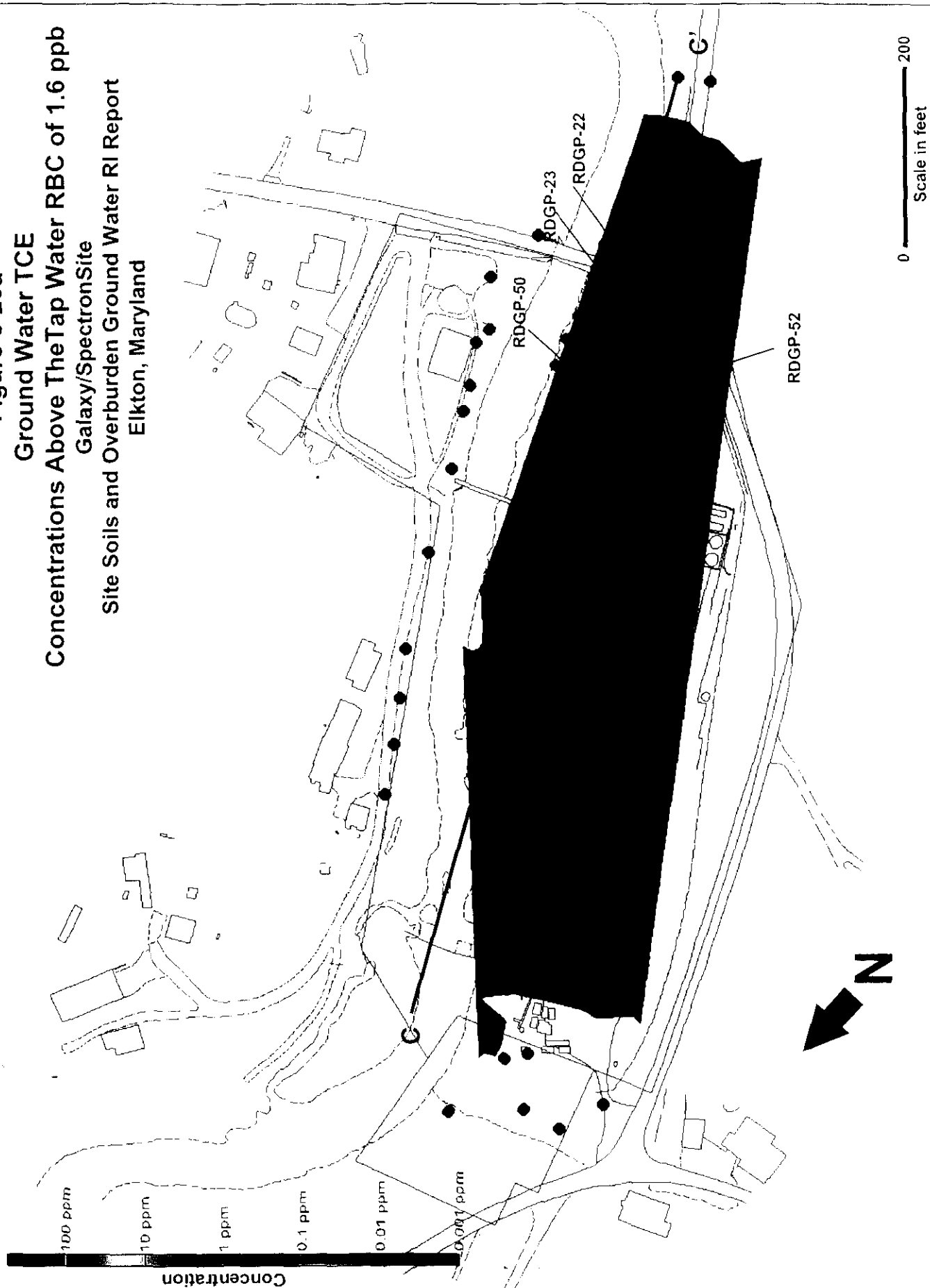
Ground Water TCE

Concentrations Above The Tap Water RBC of 1.6 ppb

Galaxy/Spectron Site

Site Soils and Overburden Ground Water RI Report

Elkton, Maryland



AR303023

**Figure 5-20b**  
**Ground Water TCA**  
**Concentrations Above The Tap Water RBC of 1.6 ppb**  
**C-C' Cross-Section**  
**Galaxy/Spectron Site**  
**Site Soils and Overburden Ground Water RI Report**  
**Elkton, Maryland**

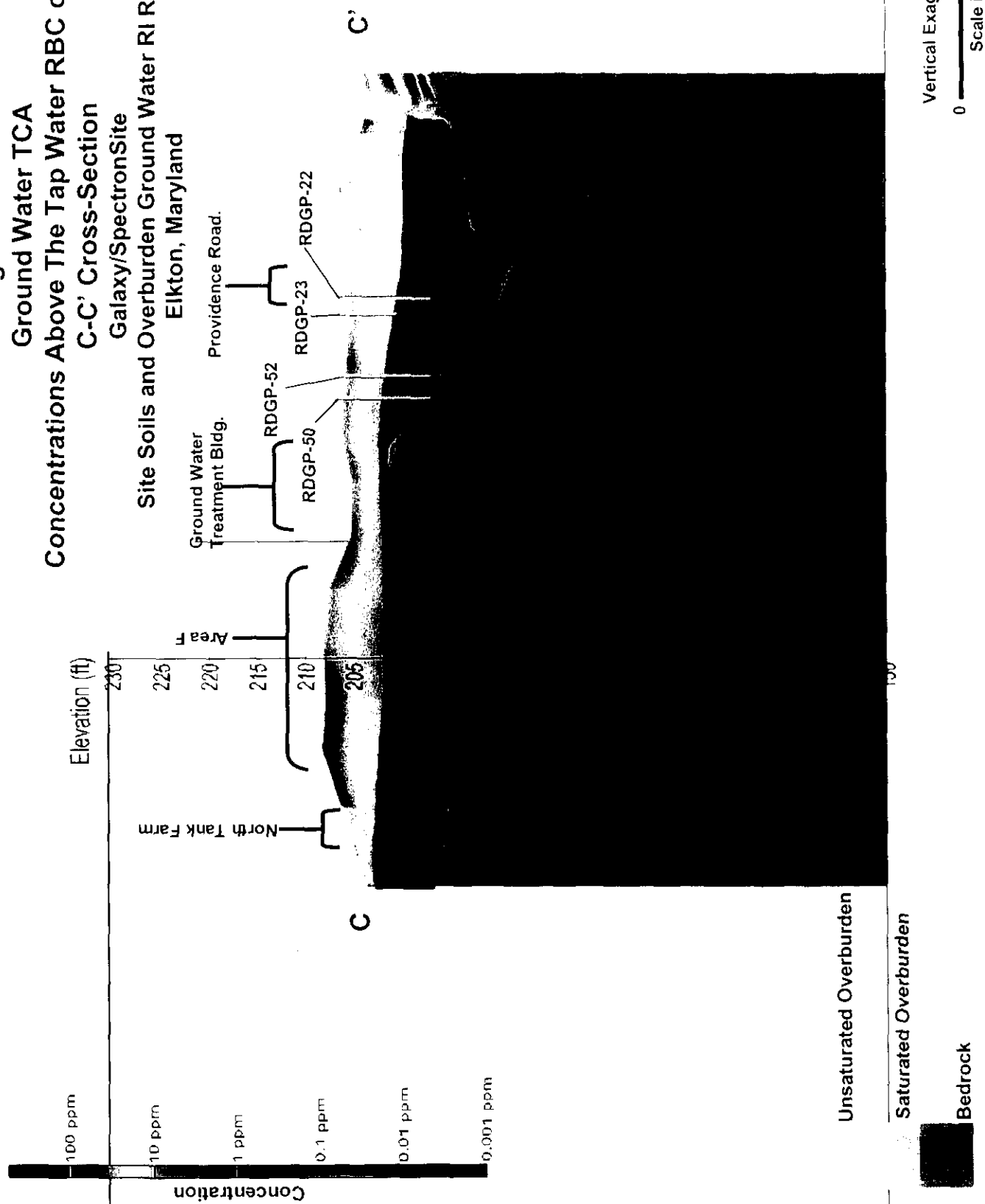
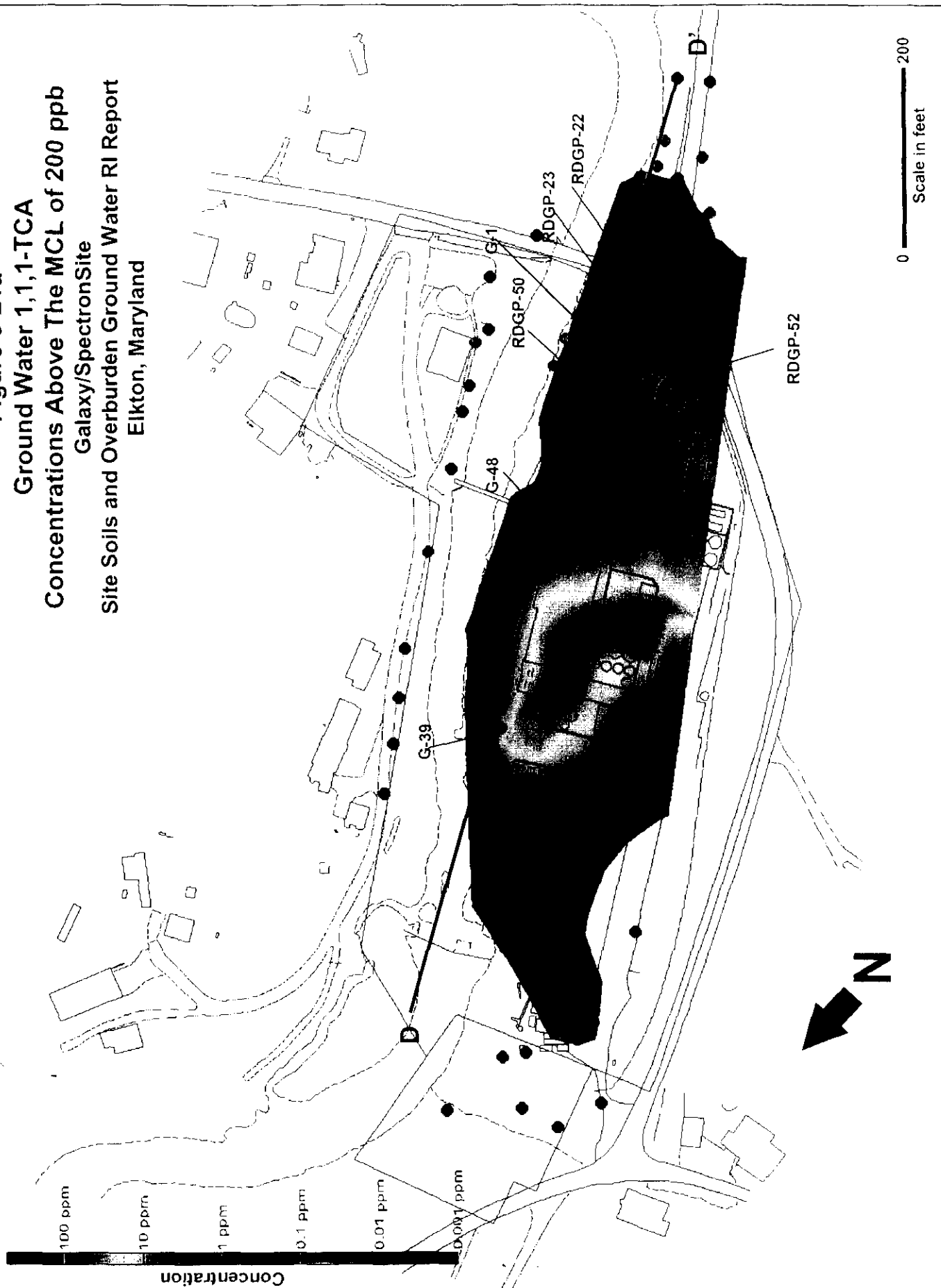
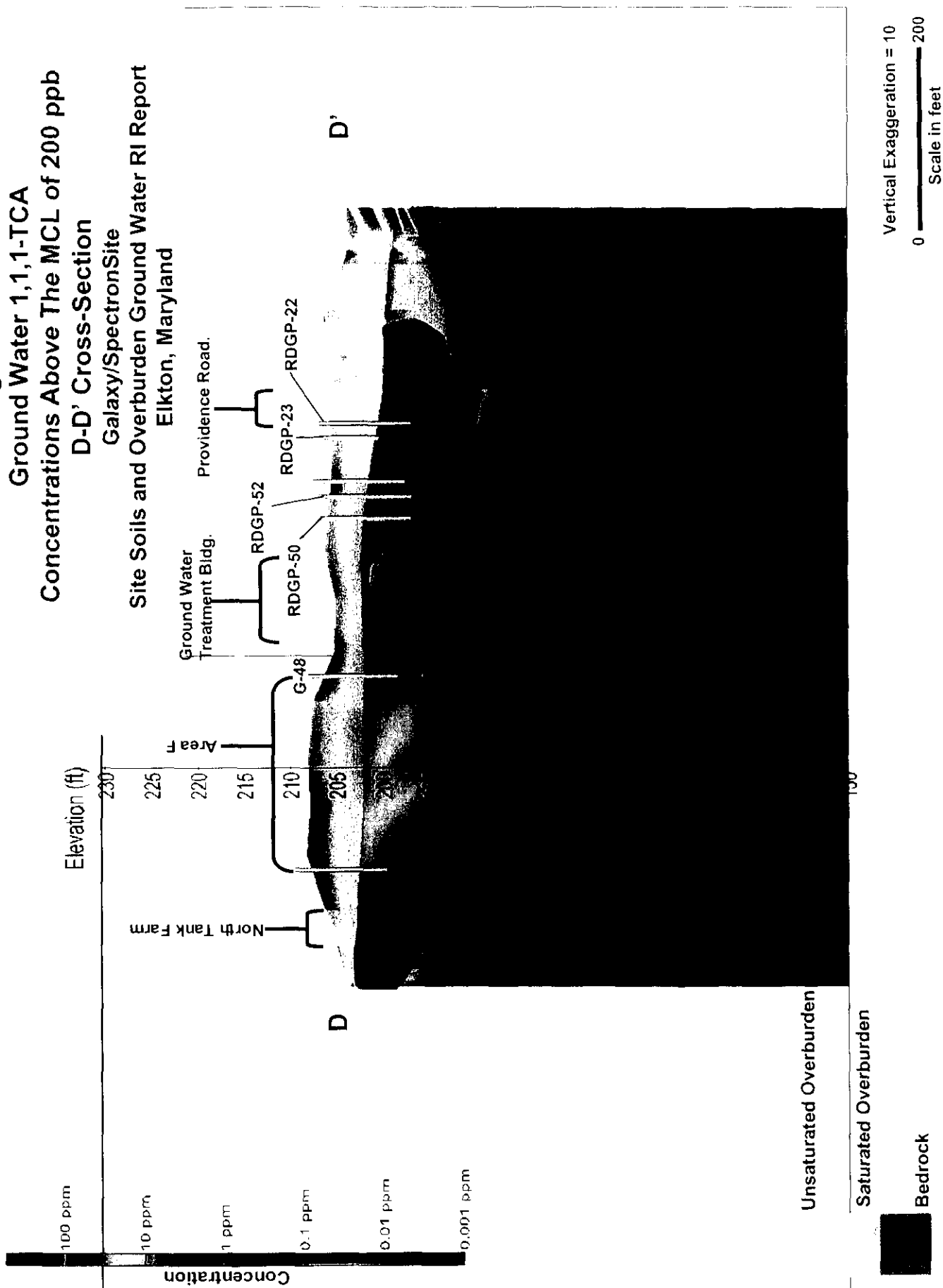


Figure 5-21a  
Ground Water 1,1,1-TCA  
Concentrations Above The MCL of 200 ppb  
Galaxy/SpectronSite  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland



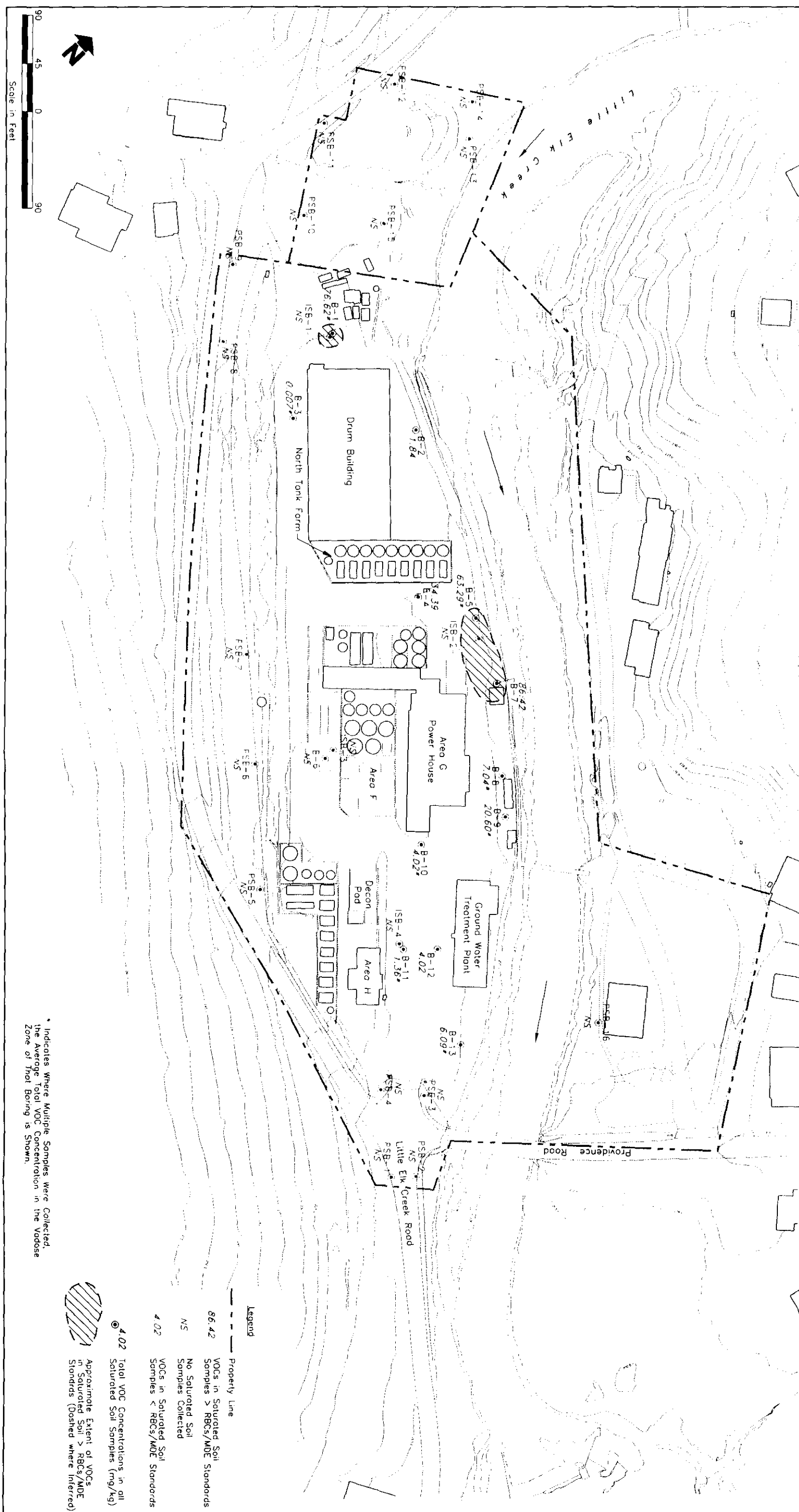
AR303025

**Figure 5-21b**  
**Ground Water 1,1,1-TCA**  
**Concentrations Above The MCL of 200 ppb**  
**D-D' Cross-Section**  
**Galaxy/Spectron Site**  
**Site Soils and Overburden Ground Water RI Report**  
**Elkton, Maryland**





**Figure 5-23**  
**Total VOCs in Saturated Soil Samples**  
**Galaxy/Spectron Site**  
**Site Soils and Overburden**  
**Ground Water RI Report**  
**Elkton, Maryland**

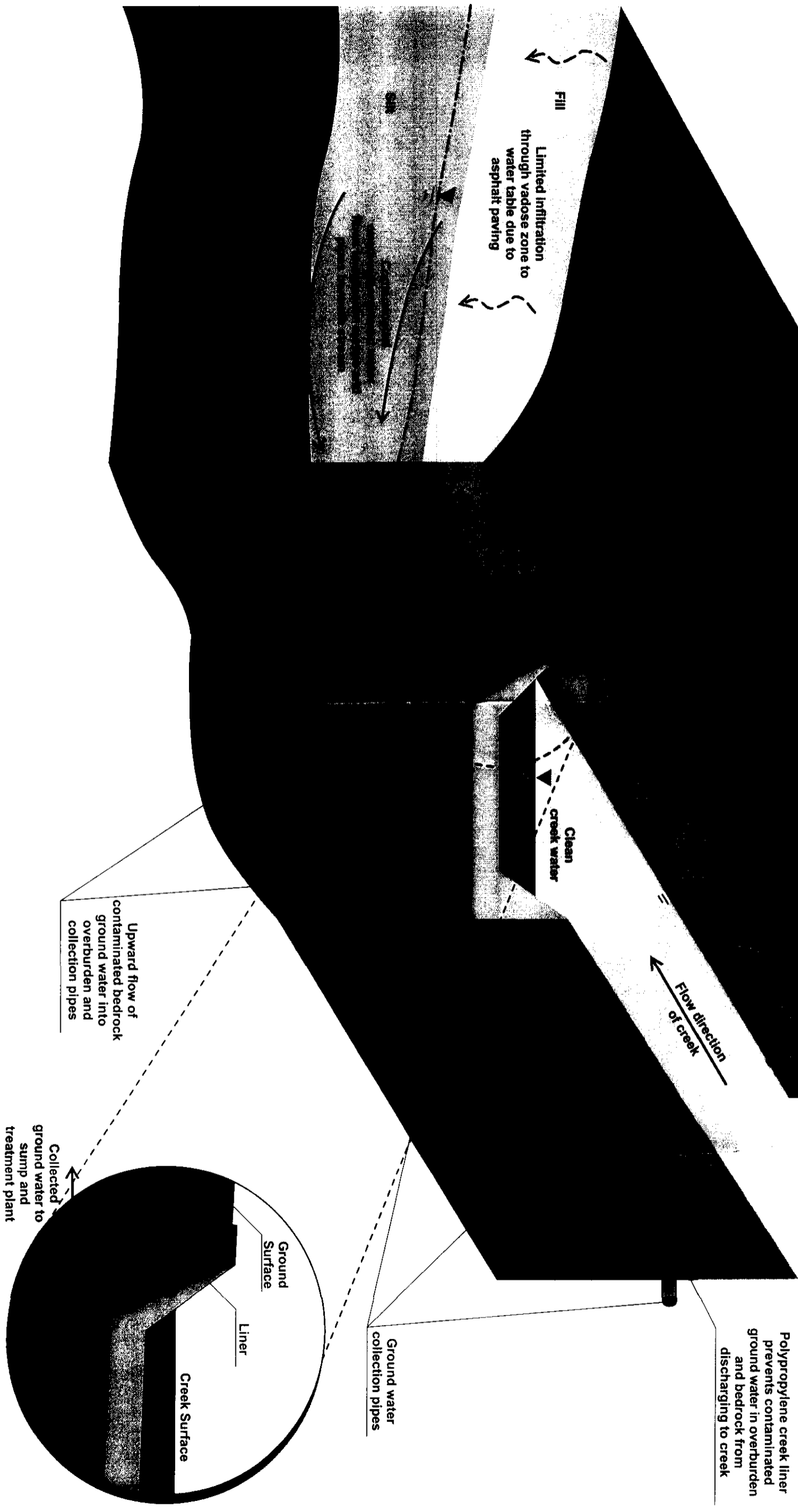


\* Indicates Where Multiple Samples were Collected, the Average Total VOC Concentration in the Vadose Zone of That Boring is Shown.

**Figure 5-24**  
**Site Conceptual Model**  
**Galaxy/Spectron Site**  
**Site Soils and Overburden**  
**Ground Water RI Report**  
**Elkton, Maryland**



Drawing not to scale



*Tables*

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Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to Field Data  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	15B-4 (4-97)	15B-5 (6-97)**	PSB-1 (6-97)	PSB-3 (7-97)	PSB-6 (8-97)
EMT TRAFFIC REPORT NUMBER					
DATE COLLECTED	3/27/97	3/27/97	3/27/97	3/27/97	3/27/97
PERCENT MOISTURE	16	8	13	7	10
Volatile Organic Compounds (ug/kg)	Lab	Lab	Lab	Lab	Lab
Acetone		30		1	
Benzene	360	2			
2-Butanone		11			
Carbon Disulfide				12	
Carbon Tetrachloride				2	
Chlorobenzene	14000	110		24	
Chloroethane					
Chloroform					
Chloromethane					
1,1-Dichloroethane	6400	58		71	
1,2-Dichloroethane	620	15		8	
1,1,1-Trichloroethane				7	
1,1,2-Trichloroethane	4800	140		730	
Ethylbenzene	5200	13		42	
Methylene Chloride	860	16		130	
4-Methyl-2-Pentanone		7			
1,1,2,2-Tetrachloroethane					
Tetrachloroethene	330	33		78	
Toluene	39000	79		100	
1,1,1-Trichloroethane	7000	46		240	
1,1,2-Trichloroethane					
Trichloroethene	1200	26		73	
Vinyl Chloride	20000	14		32	
Xylene (total)		20		220	
Total Volatile Organic Compounds (ug/kg)	99990	480	3	1770	10

Constituent exceeds Residential RBC or MDE Standard. Also denotes the Residential Standard used for each constituent.  
Constituent exceeds Industrial RBC or MDE Standard. Also denotes Industrial Standard used for each constituent.

J - This result should be considered a quantitative estimate.  
B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.

E - Estimated due to interference.  
\* - This sample is a blind duplicate of sample B-12 (3-5).  
\*\* - This sample is a blind duplicate of sample B-9-4 (0-2).

NA - Not Analyzed  
ND - None Detected  
C - Carcinogenic Effects  
N - Noncarcinogenic Effects

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Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to Field Data  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	PSB-8 (4-5-43)	PSB-11 (6-27)	PSB-14 (2.5-1.57)	PSB-16 (6-27)	PSB-16 (3.5-6')
ERM TRAFFIC REPORT NUMBER	30304	30275	30305	30276	30306
MATRIX	Soil	Soil	Soil	Soil	Soil
DATE COLLECTED	6/25/97	6/25/97	6/25/97	7/2/97	7/2/97
PERCENT MOISTURE	Lab	Field	Lab	Field	Lab
Volatiles Organic Compounds (ug/kg)	11	24	10	14	
Acetone	780000				
Benzene	780000				
2-Butanone	780000				
Carbon Disulfide	780000				
Carbon Tetrachloride	780000				
Chlorobenzene	780000				
Chloroethane	780000				
Chloroform	780000				
Chloromethane	780000				
1,1-Dichloroethane	780000				
1,2-Dichloroethane	780000				
1,1,1-Trichloroethane	780000				
1,1,2-Trichloroethane	780000				
Ethylbenzene	780000				
Methylene Chloride	780000				
4-Methyl-2-Pentanone	780000				
1,1,2,2-Tetrachloroethane	780000				
Toluene	780000				
1,1,1-Trichloroethane	780000				
1,1,2-Trichloroethane	780000				
Trichloroethene	780000				
Vinyl Chloride	780000				
Xylene (total)	780000				
Total Volatile Organic Compounds (ug/kg)	780000	780000	780000	780000	780000
EPA Region III Industrial RBCs ug/kg	2000000	2000000	2000000	2000000	2000000
MDE Non-Residential Clean-up Standards ug/kg	210000	210000	210000	210000	210000
EPA Region III Residential RBCs ug/kg	11600	11600	11600	11600	11600
MDE Residential Clean-up Standards ug/kg	780000	780000	780000	780000	780000
Lab	3	2	2	2	2
Field	ND	ND	ND	ND	ND
Lab	280	12	8	ND	ND
Field	ND	ND	ND	ND	ND
Lab	630	992	1		
Field					

Constituent exceeds Residential RBC or MDE Standard. Also denotes the Residential Standard used for each constituent.  
Constituent exceeds Industrial RBC or MDE Standard. Also denotes the Industrial Standard used for each constituent.

- J - This result should be considered a quantitative estimate.
- B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.
- E - Estimated due to interference
- .. This sample is a blind duplicate of sample B-12 (3-5).
- .. This sample is a blind duplicate of sample ISB-4 (6-2).
- NA - Not Analyzed
- ND - None Detected
- C - Carcinogenic Effects
- N - Noncarcinogenic Effects









Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to GC Data  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	EPA Region III Industrial RBCs ug/kg	MDE Non-Residential Clean-up Standards ug/kg	EPA Region III Residential RBCs ug/kg	MDE Residential Clean-up Standards ug/kg	B-8 (11-13) Lab NA Field NA	B-11 (5-7) Lab NA Field NA	B-12 (3-5) Lab NA Field NA	B-20 (3-5)* Lab NA Field NA	ISB-1 (0-27) Lab NA Field NA
<b>ERM TRAFFIC REPORT NUMBER</b>									
<b>MATRIX</b>									
<b>DATE COLLECTED</b>									
<b>PERCENT MOISTURE</b>									
Pesticide/PCBs Compounds (ug/kg)									
Aldrin	336.7 C	620		230					
Aroclor-1016	143000.0 C								
Aroclor-1221	2861.6 C								
Aroclor-1232	2861.6 C								
Aroclor-1242	2861.6 C								
Aroclor-1248	2861.6 C								
Aroclor-1254	2861.6 C								
Aroclor-1260	2861.6 C								
alpha-BHC	908.4 C								
beta-BHC	3179.6 C								
delta-BHC	3200.0 C								
gamma-BHC (Lindane)	4.4 C								
alpha-Chlordane	16000.0 C								
gamma-Chlordane	16000.0 C								
4,4'-DDE	23846.7 C								
4,4'-DDE	16832.9 C								
4,4'-DDT	16832.9 C								
Dieldrin	357.7 C								
Endosulfan I	1200000.0 N								
Endosulfan II	1200000.0 N								
Endosulfan sulfate	1200000.0 N								
Endrin	613200.0 N								
Endrin aldehyde	610000.0 N								
Endrin ketone	610000.0 N								
Heptachlor	1271.8 C								
Heptachlor epoxide	638.9 C								
Methoxychlor	10220000.0 N								
Toxaphene	5202.9 C								

J - This result should be considered a quantitative estimate.  
B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.  
E - Estimated due to interference  
\*\* - This sample is a blind duplicate of sample B-12 (3-5).  
NA - Not Analyzed  
ND - None Detected  
C - Carcinogenic Effects  
N - Noncarcinogenic Effects

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Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to GC Data  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	EPA Region III Industrial RBCs ug/kg	MDE Non-Residential Clean-up Standards ug/kg	EPA Region III Residential RBCs ug/kg	MDE Residential Clean-up Standards ug/kg	ISE-4 (4-6) Lab	ISE-5 (6-27) Lab	ISE-1 (0-2) Lab	ISE-3 (7-8) Lab	ISE-6 (0-2) Lab
ERM TRAFFIC REPORT NUMBER									
MATRIX									
DATE COLLECTED									
PERCENT MOISTURE									
Pesticide/PCBs Compounds (ug/kg)									
Aldrin	336.7 C	620		230	ND				
Arndor-1016	143000.0 C								
Arndor-1221	2861.6 C								
Arndor-1232	2861.6 C								
Arndor-1242	2861.6 C								
Arndor-1248	2861.6 C								
Arndor-1254	2861.6 C								
Arndor-1260	2861.6 C								
alpha-BHC	908.4 C	2800		910					
beta-BHC	3179.6 C	1800		1800					
delta-BHC	3200.0 C	620		230					
gamma-BHC (Lindane)	4.4 C	620		2300					
alpha-Chlordane	16000.0 C	10000		3900					
gamma-Chlordane	16000.0 C	10000		3900					
4,4'-DDD	23466.7 C	7300		24000					
4,4'-DDE	16833.9 C	52000		17000					
4,4'-DDT	16833.9 C	10000		3900					
Dieldrin	357.7 C	1000		360					
Endosulfan I	12000000.0 N	6600							
Endosulfan II	12000000.0 N	120000							
Endosulfan sulfate	12000000.0 N	120000							
Endrin	613200.0 N	6200							
Endrin aldehyde	610000.0 N	6200							
Endrin ketone	610000.0 N	6200							
Heptachlor	1271.8 C	3900		740					
Heptachlor epoxide	628.9 C	270		100					
Methoxychlor	10220000.0 N	26000							
Toxaphene	5202.9 C	16000		5200					

1 - This result should be considered a quantitative estimate.  
B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.  
E - Estimated due to interference  
+ - This sample is a blind duplicate of sample B-12 (3-5).  
+ - This sample is a blind duplicate of sample B-4 (0-2).  
NA - Not Analyzed  
ND - None Detected  
C - Carcinogenic Effects  
N - Noncarcinogenic Effects

Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to GC Data  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	EPA Region III Industrial RBCs ug/kg	MDE Non-Residential Clean-up Standards ug/kg	EPA Region III Residential RBCs ug/kg	MDE Residential Clean-up Standards ug/kg	PSB-11 (0-2') Lab Field	PSB-14 (2.5-3.5') Lab Field	PSB-16 (0-2') Lab Field	PSB-16 (3.5-4') Lab Field
DATE COLLECTED								
PERCENT MOISTURE								
Pesticide/PCBs Compounds (ug/kg)								
Aldrin	356.7	620		230				
Aroclor-1016	143000.0							
Aroclor-1221	2861.6							
Aroclor-1222	2861.6							
Aroclor-1242	2861.6							
Aroclor-1248	2861.6							
Aroclor-1254	2861.6							
Aroclor-1260	2861.6							
alpha-BHC	908.4	2800		910				
Beta-BHC	3179.6	1800		1800				
delta-BHC	3203.0	6200		2300				
gamma-BHC (Lindane)	4.4	6200		3900				
alpha-Chlordane	16000.0	10000		3900				
gamma-Chlordane	16000.0	10000		3900				
4,4'-DDD	23846.7	73000		24000				
4,4'-DDE	16832.9	52000		17000				
4,4'-DDT	16832.9	10000		3900				
Dieldrin	357.7	1000		360				
Endosulfan I	12000000.0	6600						
Endosulfan II	12000000.0	120000		470000.0				
Endosulfan sulfate	12000000.0	120000		470000.0				
Endrin	613200.0	6200		23464.3				
Endrin aldehyde	610000.0	6200		23000.0				
Endrin ketone	610000.0	6200		23000.0				
Heptachlor	1271.8	3900		740				
Heptachlor epoxide	628.9	270		100				
Methoxychlor	10220000.0	24000		391071.4				
Toxaphene	5202.9	16000						

J - This result should be considered a quantitative estimate.  
B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.

E - Estimated due to interference.

\* - This sample is a blind duplicate of sample B-12 (3-5).

\*\* - This sample is a blind duplicate of sample PSB-4 (0-2).

NA - Not Analyzed

ND - None Detected

C - Carcinogenic Effects

N - Noncarcinogenic Effects

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Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to Field Data  
Galaxy/Spectrum Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	EPA Region III Industrial RBCs	EPA Region III RBCs	MDE Non-Residential Clean-up Standards	EPA Region III RBCs	MDE Residential Clean-up Standards	Central Maryland ATCs	B-8 (11-157)	B-11 (5-7)	B-12 (3-5)	B-20 (3-5)*	ISB-1 (8-2)
MATRIX							Soil	Soil	Soil	Soil	Soil
DATE COLLECTED							9/2/93	9/2/93	9/2/93	9/2/93	6/22/97
PERCENT MOISTURE							11	21	11	19.8	13
Inorganic Parameters							Lab	Lab	Lab	Lab	Field
TAL Metals (mg/kg)							NA	NA	NA	NA	NA
Aluminum	2044000	78214.3	21000	78214.3	19000						
Antimony	817.6	31.3	6.8	31.3	6.8						
Arsenic	3.8	2.3	4.9	2.3	4.9						
Barium	143000	5475.0	1500	5475.0	99						
Beryllium	4080	156.4	41	156.4	1.6						
Cadmium	1022	39.1	21	39.1	1.1						
Calcium					12000						
Chromium	610	224.64	62	224.64	30						
Cobalt	40800	1564.3	1200	1564.3	33						
Copper	81760	3128.6	830	3128.6	42						
Iron	1226400	46928.6	6200	46928.6	26000						
Lead		4000	400	4000	61						
Magnesium					3700						
Manganese	40800	1564.3	410	1564.3	1400						
Mercury	20	0.8	0.12	0.8	0.14						
Nickel	40800	1564.3	410	1564.3	22						
Potassium					26000						
Selenium	10220	391.1	100	391.1	1						
Silver	10220	391.1	100	391.1	1						
Sodium					220						
Thallium	143.08	5.5	1.5	5.5	1.5						
Vanadium	14308	547.5	150	547.5	35						
Zinc	612000	23464.3	6200	23464.3	73						

J - This result should be considered a quantitative estimate.  
B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.  
E - Estimated due to interference.  
\* - This sample is a blind duplicate of sample B-12 (3-5).  
\* - This sample is a blind duplicate of sample ISB-4 (8-2).  
NA - Not Analyzed  
ND - None Detected  
C - Carcinogenic Effects  
N - Noncarcinogenic Effects

Constituent exceeds Residential RBC or MDE Standard. Also denotes the Residential Standard used for each constituent.  
Constituent exceeds Industrial RBC or MDE Standard. Also denotes the Industrial Standard used for each constituent.

Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to Field Data  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	EPA Region III Industrial RBCs	MDE Non-Residential Clean-up Standards	EPA Region III Residential RBCs	MDE Residential Clean-up Standards	Central Maryland ATCs	ISB-1 (6-4)	ISB-2 (6-2)	ISB-2 (6.5-7.5)	ISB-3 (6-2)	ISB-3 (6-4)	ISB-4 (6-2)
DATE COLLECTED						Lab	Lab	Lab	Lab	Lab	Lab
PERCENT MOISTURE						17	13	7	6	17	9
Inorganic Parameters											
TAL Metals (mg/kg)											
Aluminum	2044000	21000	78214.3		19000	6040	NA	3130	6000	4940	NA
Antimony	617.6	8.3	31.3		6.8	3.4		2.2	3.0	3.1	
Arsenic	3.8	6.2	1.4	2.3	4.9	7.1		65.2	2.3	6.5	
Barium	14300	1500	5475.0		99	285		93.9	219	66.6	
Beryllium	4068	41	156.4		1.6	0.39		0.53	0.30	0.31	
Bismuth	1022	21	39.1		1.1	2.4		2.4	0.34		
Calcium					12000	75400		11500	50600	35900	
Chromium	610	62	234.64		30	3.9		1.6	21.6	2.9	
Cobalt	40680	1200	1564.3		33	61.6		75.7	64.6	47.1	
Copper	81760	830	3128.6		42	31.3		7720	1440	13500	
Iron	1226400	6200	46928.6		26000	11000		110	436	1300	
Lead		400	4000		61	377		4990	40200	188	
Magnesium					3700	19400		57.3		143	
Manganese	40680	410	1564.3		1400	2.8		0.32	0.79	0.68	
Mercury	20	0.12	0.8		0.14	1.2		8.7	11.2	10.1	
Nickel	40680	410	1564.3		22	8.7		396	899	854	
Potassium					26000	1460		0.48	8.5	2.4	
Selenium	10220	100	391.1		1	0.97		1.8	1.1	0.99	
Silver	10220	100	391.1		1	2.8		47.2	175	92.7	
Sodium					230	143		0.15	0.37	0.15	
Thallium	143.08	1.5	5.5		1.5	0.20		10.6	11.5	13.0	
Vanadium	14308	150	547.5		35	13.4		94.6	300	212	
Zinc	613200	6200	23464.3		73	298					

J - This result should be considered a quantitative estimate.  
B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.  
E - Estimated due to interference.  
\* - This sample is a blind duplicate of sample B-17 (1.5).  
\*\* - This sample is a blind duplicate of sample ISB-4 (0-2).  
NA - Not Analyzed  
ND - Not Detected  
C - Carcinogenic Effects  
N - Noncarcinogenic Effects

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Table 5-2 (cont'd)  
Comprehensive Soil Analytical Results and Comparison to Field Data  
Galaxy/Spectron Site  
Site Soils and Overburden Ground Water RI Report  
Elkton, Maryland

SAMPLE LOCATION	EPA Region III Industrial RBCs	MDE Non-Residential Clean-up Standards	EPA Region III Residential RBCs	MDE Residential Clean-up Standards	Central Maryland ATCs	PSB-8 (15-45)	PSB-11 (0-2)	PSB-14 (0.5-3.5)	PSB-16 (0-2)	PSB-16 (3.5-4)
TEAM TRAFFIC REPORT NUMBER						30304	30275	30305	30276	30306
DATE COLLECTED						6/25/97	6/25/97	6/25/97	7/2/97	7/2/97
PERCENT MOISTURE						11	11	24	10	14
PERCENT MOISTURE						Lab	Field	Lab	Field	Lab
<i>Inorganic Parameters</i>										
<i>TAL Metals (mg/kg)</i>										
Aluminum	2044000	N	78214.3	19000	NA	NA	6580	NA	7590	NA
Antimony	817.6	N	31.3	6.8	NA	NA	3.5	NA	13.1	NA
Arsenic	3.8	C	3.8	2.3	NA	NA	5.7	NA	29.2	NA
Barium	143080	N	5475.0	99	NA	NA	66.4	NA	180	NA
Beryllium	4088	N	156.4	1.6	NA	NA	0.40	NA	0.53	NA
Cadmium	1022	N	39.1	1.1	NA	NA	0.42	NA	1.2	NA
Calcium		N		12000	NA	NA	8.7	NA	2080	NA
Chromium	610	N	234.64	30	NA	NA	3.5	NA	161	NA
Cobalt	40880	N	1564.3	33	NA	NA	8.7	NA	8.8	NA
Copper	81760	N	3128.6	42	NA	NA	26.0	NA	197	NA
Iron	1226400	N	46928.6	26000	NA	NA	10400	NA	47500	NA
Lead		N	400	61	NA	NA	89.0	NA	1740	NA
Magnesium		N		3700	NA	NA	1170	NA	1.4	NA
Manganese	40880	N	1564.3	1400	NA	NA	0.23	NA	22.9	NA
Mercury	20	N	0.8	0.14	NA	NA	6.4	NA	853	NA
Nickel	40880	N	1564.3	22	NA	NA	6.4	NA	1.8	NA
Potassium		N		2600	NA	NA	644	NA	1.0	NA
Selenium	10220	N	391.1	1	NA	NA	0.45	NA	93.7	NA
Silver	10220	N	391.1	1	NA	NA	1.3	NA	0.28	NA
Sodium		N		230	NA	NA	202	NA	16.9	NA
Thallium	143.08	N	5.5	1.5	NA	NA	0.17	NA	397	NA
Vanadium	14308	N	547.5	35	NA	NA	11.0	NA		NA
Zinc	613200	N	23464.3	73	NA	NA	55.2	NA		NA

J - This result should be considered a quantitative estimate.  
B - This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.  
E - Estimated due to interference.  
- - This sample is a blind duplicate of sample B-12 (3-5).  
NA - Not Analyzed  
ND - None Detected  
C - Carcinogenic Effects  
N - Noncarcinogenic Effects

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**Table 5-3**  
**Comprehensive Field Shallow Ground Water Analytical Results**  
**Galaxy/Spectron**  
**Site Soils and Overburden Ground Water RI Report**  
**Elkton, Maryland**

█ Constituent exceeds EPA Region III Tap Water RBC  
 █ Constituent exceed EPA Drinking Water MCL

Investigation	Sample	Depth		Methylene Chloride	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene	Total Other VOCs
RBC/MCL*			ug/l	4.1	200	1.6	1.1	
RI	NTW-1	10	ug/l	ND	ND	ND	ND	NA
	NTW-2	10	ug/l	ND	ND	ND	ND	NA
	NTW-3	10	ug/l	ND	ND	ND	ND	NA
	NTW-4	10	ug/l	ND	ND	ND	ND	NA
	NTW-5	10	ug/l	ND	ND	ND	ND	NA
	STW-1	10	ug/l	ND	270	E	0.5	J
	STW-2	10	ug/l	ND	190	E		NA
	STW-3	10	ug/l	ND	24	1.4	ND	NA
	STW-4	10	ug/l	ND	ND	ND	ND	NA
	STW-5	10	ug/l	ND	ND	ND	ND	NA
	STW-7	10	ug/l	ND	ND	ND	ND	NA
	ETW-1	10	ug/l	ND	ND	ND	ND	NA
	ETW-2	10	ug/l	ND	ND	ND	ND	NA

U: The analyte was analyzed but not detected at or above the associated value.

J: Denotes an estimated value.

B: This result is qualitatively invalid since this compound was detected in a blank at a similar concentration.

E: Concentration exceeded calibration range

\* The EPA Drinking Water MCL was used for 1,1,1-TCA, which is lower than the RBC. No MCL is available for Methylene Chloride; therefore, the EPA Region III Tap Water RBC was used, which is lower than the MDE Standard.

























TABLE 5-6  
RESIDENTIAL WELL DEPTHS  
GALAXY/SPECTRON SITE  
ELKTON, MARYLAND

	Address	Well Owner	Well Depth (feet)
			260
1.	[REDACTED]	[REDACTED]	200
2.	[REDACTED]	[REDACTED]	150
3.	[REDACTED]	[REDACTED]	150
4.	[REDACTED]	[REDACTED]	175
5.	[REDACTED]	[REDACTED]	400
6.	520 Ed Moore Rd	[REDACTED]	360
7.	[REDACTED]	[REDACTED]	Unknown
8.	[REDACTED]	[REDACTED]	20
9.	[REDACTED]	[REDACTED]	220
10.	[REDACTED]	Crouse	Unknown
11.	[REDACTED]	[REDACTED]	Unknown
12.	[REDACTED]	[REDACTED]	500
13.	[REDACTED]	[REDACTED]	39
14.	[REDACTED]	[REDACTED]	140
15.	[REDACTED]	[REDACTED]	70
16.	[REDACTED]	[REDACTED]	285
17.	[REDACTED]	[REDACTED]	240
18.	[REDACTED]	[REDACTED]	Unknown
19.	[REDACTED]	[REDACTED]	90
20.	[REDACTED]	[REDACTED]	Dug Spring
21.	[REDACTED]	[REDACTED]	6-8
22.	[REDACTED]	[REDACTED]	130
23.	360 Ed Moore Rd	[REDACTED]	200
24.	[REDACTED]	[REDACTED]	Unknown
25.	[REDACTED]	[REDACTED]	Unknown
26.	[REDACTED]	[REDACTED]	122
27.	[REDACTED]	[REDACTED]	Unknown
28.	[REDACTED]	[REDACTED]	



*Groundwater and Environmental Consultants*

January 10, 2002

VIA FEDERAL EXPRESS

Mr. Robert Sanchez  
Remedial Project Manager  
United States Environmental Protection Agency  
Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029\

Subject: Spectron Superfund Site, Elkton, Maryland

Dear Mr. Sanchez:

Thank you for your letter dated January 3, 2002 granting an extension until January 14, 2002 for the PRP Group to complete its review of the EPA's and MDE's comments on the RI/FS/RA for Soil and Overburden Ground Water and to prepare responses to these comments. Responses to comments on the RI/FS/RA and a revised version of the RA will be delivered to EPA on or before January 14, 2002.

As I indicated to you in my letter of November 19, 2001, the PRP Group's lead hydrogeologist, Ed Sullivan resigned from ERM effective November 26, 2001. As you are aware, Mr. Sullivan handled most of the day-to-day activities relating to the RI/FS for Soil and Overburden Ground Water and developed the Bedrock RI Work Plan.

Since learning of Mr. Sullivan's resignation from ERM, the PRP Group has been reviewing the qualifications of other hydrogeologists within ERM's proposed transition team and in other organizations. After careful consideration, the PRP Group has decided to transfer this assignment to Mr. Michael Kozar of O'Brien and Gere. As you are aware, Mr. Kozar has been evaluating the performance of the stream liner system and performing other hydrogeological consultation for the PRP Group. In addition to his direct experience with the Spectron site, a review of Mr. Kozar's qualifications indicates that he has considerable experience with ground water investigations in fractured rock involving volatile organic compounds and DNAPL, including other Superfund sites in Region III. A copy of Mr. Kozar's qualifications can be provided upon request. In recognition of the time-critical nature of this work, Mr. Kozar has reviewed the Bedrock RI Workplan prepared by ERM and has indicated to the PRP Group that OBG is

Mr. Robert Sanchez  
January 10, 2002  
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prepared to implement the Work Plan as approved by EPA with no modifications or changes.

As stated in my letter dated January 4, 2002, we have received two signed access agreements from property owners. We anticipate receiving all remaining agreements by February 1, 2002. We have scheduled drilling activities to commence during the week of February 11, 2002 pending property owner approval. I will forward to you a detailed schedule once we have received all signed access agreements.

As was discussed at length in the December 19, 2001 meeting, and expressed in your cover letter that accompanied the Soil and Overburden Groundwater RI/FS/RA comments, EPA believes that a significant contamination source exists within the soils beneath existing buildings, concrete slabs and foundations and beneath the existing asphalt pavement. The PRP Group believes that the EPA's interpretation of site conditions may be inconsistent with the historical records for the site. Inspections made during the early 1980's, by the Maryland Department of Mental Health and Hygiene, Office of Environmental Programs identified areas at the site where drums containing hazardous substances were stored directly on the ground surface without any dikes or other means of spill containment. Further, these inspections determined that during the approximately 20 years of site activity, spills had occurred under hose connections adjacent to the tank farm dike and that the transfer of waste from both the F and G area dikes to 55 gallon drums resulted in repeated spills.

In response to the conditions found during these inspections, the site owner was required to excavate impacted soil from processing areas, storage locations and the former waste disposal pit and lagoon. Following the completion of these activities, concrete secondary containment structures were installed in the processing and storage areas and the remainder of the site was capped in asphalt. The site remained active for an additional three to five years.

The PRP Group has reviewed MDE records and has recently questioned the site owner about these source removal activities (refer to attachment). While the PRPs' investigation into this matter is not complete, there appears to be sufficient evidence to support the PRPs' position that some level of source removal was performed under the observation of MDE and that the potential contaminant mass removal resulting from these activities should not be dismissed.

Mr. Robert Sanchez  
January 10, 2002  
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In its comments on the RI, EPA emphasizes that soil conditions beneath the existing concrete slabs and the asphalt cap have not been investigated. A review of the RI Work Plan confirms that this level of investigation was not contemplated at the time the Work Plan was approved by EPA.

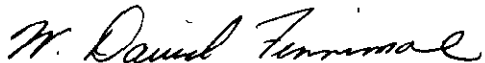
If EPA now believes it is necessary to evaluate potential source areas and the completeness of the previous soil remediation activities, the PRP Group is willing to conduct a Focused RI to characterize current soil conditions beneath existing buildings, concrete slabs and the asphalt cover. In addition, as a component of the Focused RI, the PRP Group proposes to collect an additional round of ground water samples from the existing onsite monitoring wells and to collect additional data requested by MDE to address the MDE's concern regarding the effective containment area of the stream liner system.

The PRP Group is committed to continued progress towards the remediation of the site. The PRP Group also acknowledges the EPA's desire to issue a ROD for this site as soon as reasonably possible. The PRP Group is willing to identify the building and structure demolition as a separate operable unit (OU-3) and to proceed with the development of an ROD for this activity on a parallel track with the Focused RI and the Bedrock RI.

The PRP Group is willing to meet with EPA and MDE to discuss this proposal in detail, to address any administrative concerns and to develop a schedule for implementation.

Please contact me at (610)524-9466 to schedule a mutually agreeable time to meet.

Sincerely,



W. David Fennimore, P.G.  
Project Coordinator

cc: Technical Committee-w/enclosure

2806L.45

Paul J. Mraz  
1606 Woodlawn Avenue  
Wilmington, DE 19806  
(302) 426-1699

December 26, 2001

Carl B. Everett, Esq.  
Saul Ewing LLP, Attorneys at Law  
Center Square West  
1500 Market Street, 38th Flr.  
Philadelphia, PA 19102

RE: Spectron Site, Removal of Surface Soils

Dear Carl:

I received your letter late due to the change in my address. Since I have essentially retired my office is in my home at the above address.

One of the consequences of the Sect. 7003 action that was brought against us through the cooperation of the State of Maryland with the EPA was that the surface soil in designated areas selected by the State had to be removed insofar as was possible to do so<sup>1</sup>. Accordingly, under the direction of Joseph Grace, our then environmental manager and former member of the State Water Resources Commission, as much topsoil as existed was scraped up over wide areas, treated on site, and shipped to an approved disposal company. These areas included all processing locations, tank storage locations, and the former waste disposal pit and lagoon. I recall watching the operation being carried out. My memory is that the State approved the result and we were then permitted to proceed with the asphalt capping.

If you require any more information please don't hesitate to contact me.

Yours truly,

  
Paul J. Mraz

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<sup>1</sup> As you have surely become aware, there is not much topsoil to be scraped before one encounters very rocky subsoil.

AR303066

\*\* TOTAL PAGE.02 \*\*